The girls who were abused by Jeffrey Epstein and the cops who championed their cause remain angry over what they regard as a gross injustice, while Epstein's employees and those who engineered his non-prosecution agreement have prospered.

By

Taking a page from Epstein's legal team, lawyers representing Epstein's victims hired private investigators and former police detectives to dig into Epstein's life. Over the past decade, they've tracked down hundreds of people, including dozens of other potential victims; they've interviewed Epstein's recruiters, bookkeepers, housekeepers, butlers, pilots and drivers. They've traveled around the country and the world, taking statements and sworn depositions, coaxing people to talk who had previously been too reticent to come forward.

In short, they did what criminal prosecutors didn't do.

Some of the information they've learned was given to federal authorities in New York. Edwards said those authorities have shown no interest in opening a new investigation focused on crimes he is alleged to have committed in that state, where he is listed as a level 3 sex offender, the most dangerous category, considered at risk to re-offend, records show. In New York, he has to register every 90 days.

Virginia Roberts holds a photo of herself at age 16, when she says Palm Beach multimillionaire Jeffrey Epstein began abusing her sexually. Emily Michot
EMICHOT@MIAMIHERALD.COM

Holding abusers accountable

In 2015, Roberts sued Maxwell for defamation in New York after Maxwell called her a liar in a news interview. The civil lawsuit was an effort by Roberts not just to clear her name, but an attempt to prove that Epstein and Maxwell operated an international underage sex trafficking operation. The lawsuit was settled out of court in 2017 and nearly all the evidence presented in the case has been sealed.

Roberts' attorney, Sigrid McCawley, claims that Roberts received a sizable settlement, although the amount is confidential.

"She wanted to hold her abusers accountable and we were able to do that by bringing this case … which we ultimately settled very successfully for her,'' said McCawley, an associate of noted Bush-Gore recount lawyer David Boies, who has also pursued cases against Epstein in federal court in New York.

Maxwell's lawyer, Laura Menninger, declined to comment, referring the Herald to the court history.

"[Roberts] fabricated a story of abuse at the hands of Ms. Maxwell in exchange for hundreds of thousands of dollars from British tabloids with a motive for selling papers and advertisements and without regard for truth, veracity or substantiation,'' Menninger noted in a 2016 response filed in the case.

In February, the Miami Herald filed a federal court motion in the Southern District of New York, seeking access to documents that were sealed in the Maxwell case. The motion, which was not opposed by Roberts, could have cast light on the full scope of Epstein's possible sex trafficking operation, who was involved and whether it was covered up. Maxwell has opposed the Herald's motion, which was denied in August.

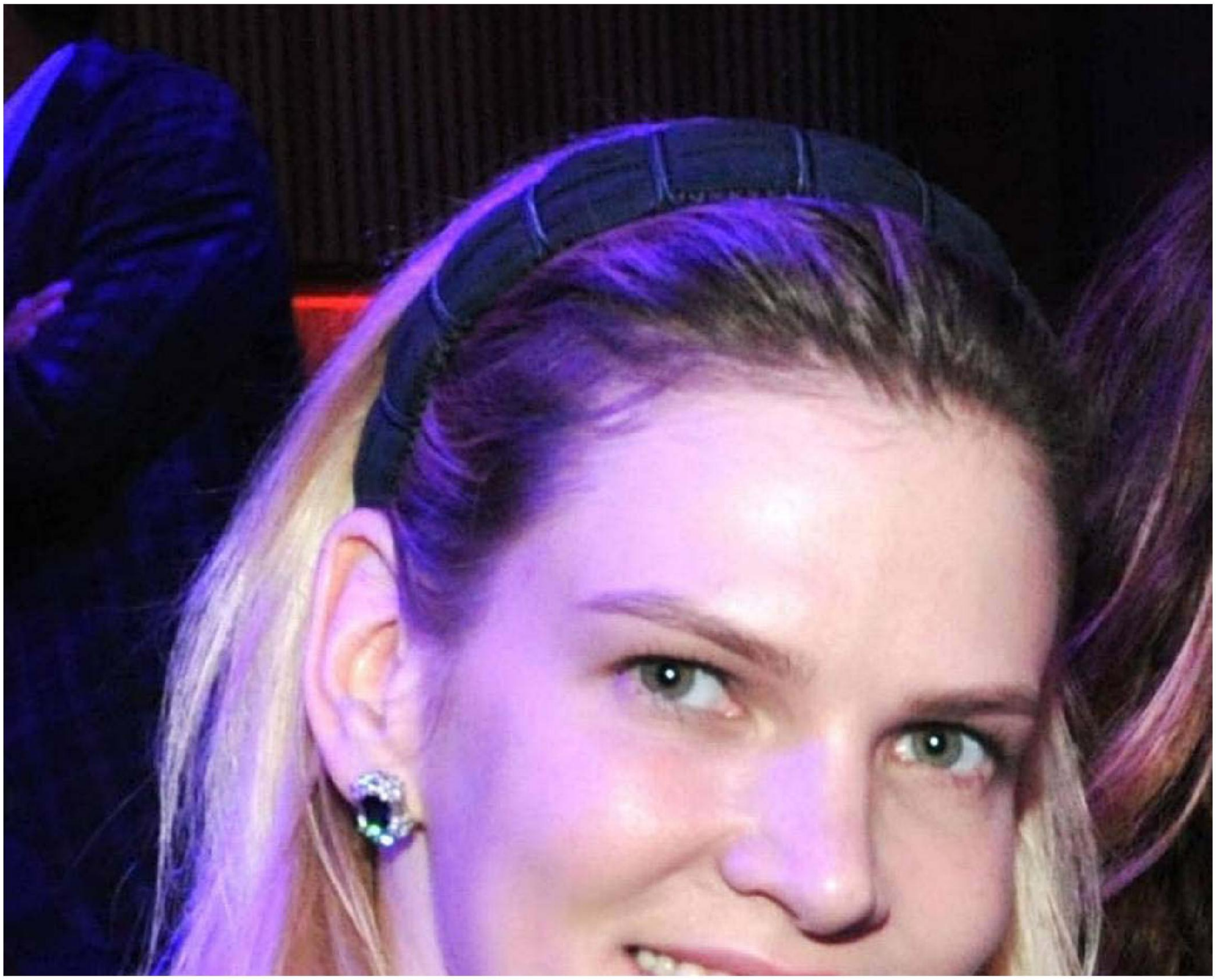
The Herald is appealing.

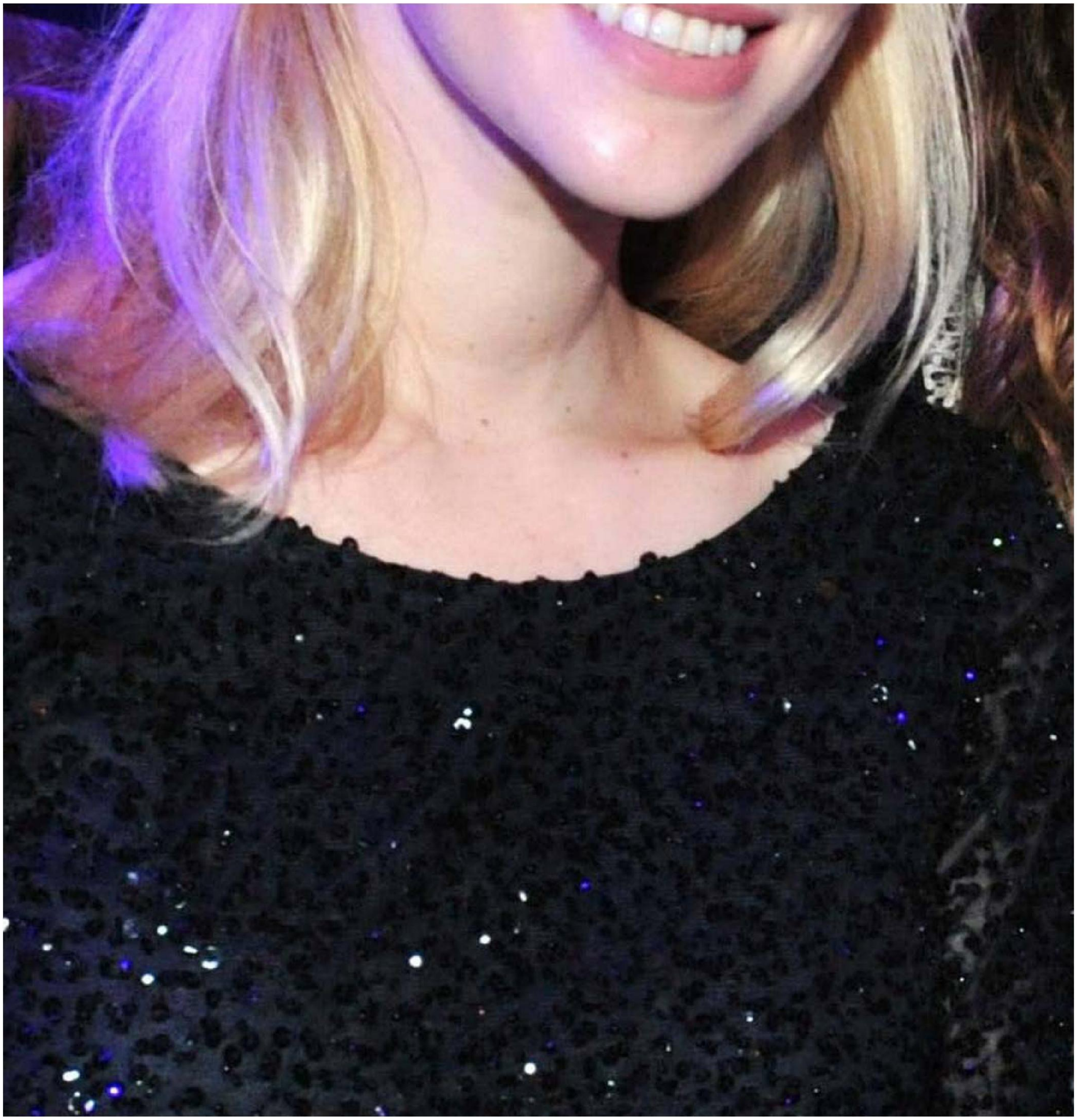
Today, Epstein has a new private jet, which takes him around the world. Flight records show that he spends most of his time on his private island, Little St. James in the U.S. Virgin Islands, which he now lists as his permanent residence. He is registered in New York and the U.S. Virgin Islands as a sex offender. New Mexico, where he owns a sprawling ranch, does not list him as a convicted sex offender.

As part of its investigation, the Herald learned that in 2013, the federal government conceded that it had given Epstein what it called "valuable consideration" for information he provided to the FBI as part of his plea deal. The documents do not elaborate, but Epstein — a hedge fund manager who once worked for the investment firm Bear Stearns — was listed as a key investor who lost money in the financial crash of 2008.

Francey Hakes, a former federal child sex crimes prosecutor, said any consideration the government gave to Epstein should be made public.

"The public has a right to know why he got a slap on the wrist, and what was the interest that was so great that allowed him to not get prosecuted?"





Nadia Marcinkova, now a professional pilot, worked for Jeffrey Epstein when he was molesting young women. Victims told police Marcinkova would participate in sex acts, often as Epstein choreographed every move. Jerod Harris

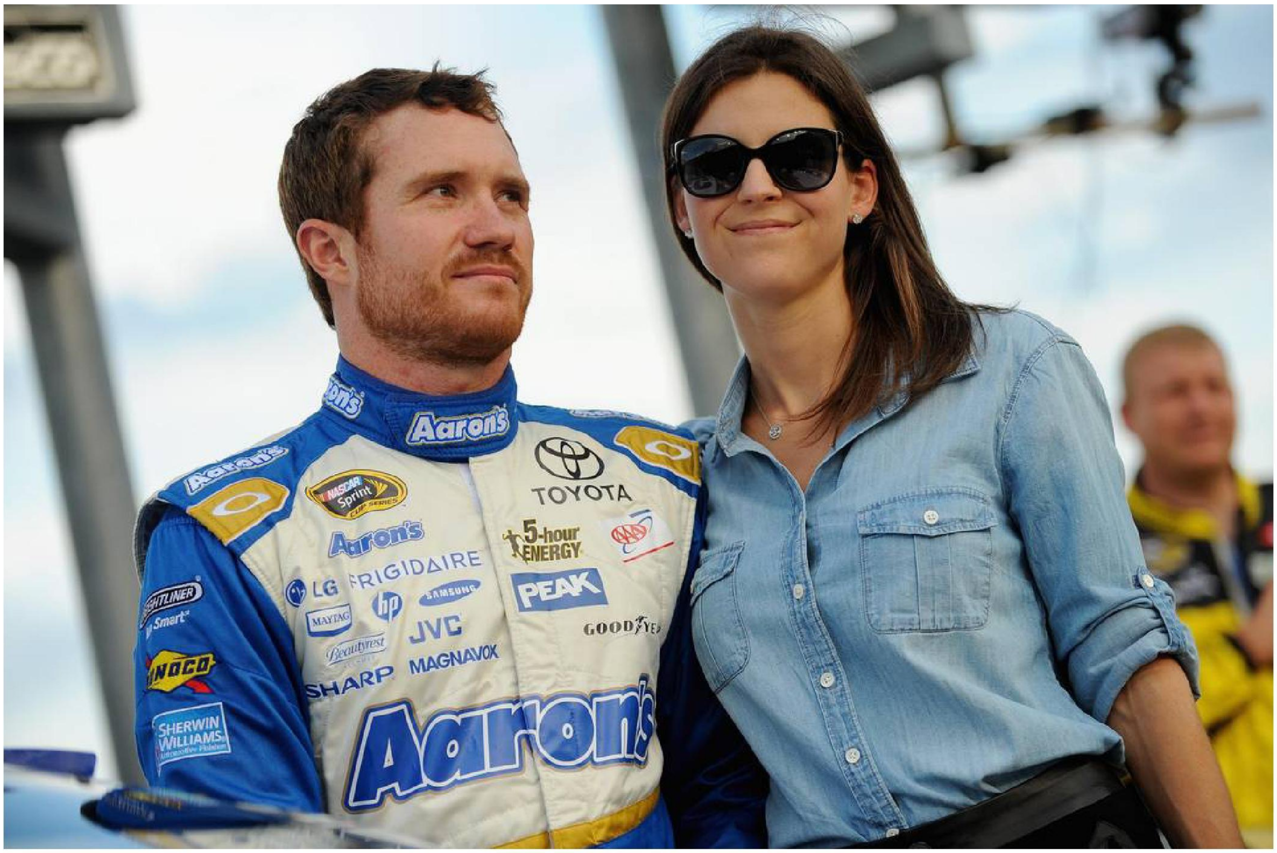
In recent years, Epstein has been traveling the world in his new Gulfstream V jet. He has been active in various charitable causes and scientific research projects. The Jeffrey Epstein VI Foundation, based in the U.S. Virgin Islands, has helped fund NeuroTV, an online network that features interviews with academics and scientists.

Then and now

Both Nadia Marcinkova and Sarah Kellen changed their names after the scandal.

Marcinkova, 32, briefly became Marcinko. She visited Epstein more than 70 times when he was in Palm Beach custody. She went on to a career in real estate. And she is now an FAA-certified commercial pilot and flight instructor who goes by the name “Global Girl’’ on social media. (www.facebook.com/GlobalGirlAviation/)

Sarah Kellen, who used the name Kensington for a while, is now married to NASCAR driver Brian Vickers. The couple divides their time between homes in North Carolina, New York and Miami Beach.



NASCAR driver Brian Vickers and his wife, Sarah, take part in pre-race ceremonies in Sparta, Ky., on June 28, 2014. She was known as Sarah Kellen when she was an aide to Jeffrey Epstein. According to police, she scheduled visits of underage girls to Epstein's Palm Beach estate for massages that turned sexual. She was not charged with a crime. Will Schneekloth *GETTY IMAGES*

Maxwell, 56, transformed herself into an internationally known environmentalist. In 2012, she founded the TerraMar Project, a nonprofit environmental group that works to protect the world's oceans. In 2013, she gave a TED Talk on ocean conservation, discussing her diving expeditions around the world.

Dershowitz, 80, continues to lecture around the country. A professor emeritus at Harvard Law School, Dershowitz has been a frequent commenter on cable TV programs, often defending President Trump.

Prince Andrew, the Duke of York, 58, remained friends with Epstein, and in 2010, a photograph was taken of the two of them strolling in Manhattan. It was later revealed that Epstein had loaned the prince's ex-wife, Sarah Ferguson, $24,000 to pay off some debts. Ferguson later called the loan a "gigantic error of judgment."

Plain human beings

Crime victims' rights advocates have used the Epstein case to strengthen the federal law in recent years, adding more precise language mandating that prosecutors notify victims about plea bargains and allow victims to be heard at sentencing.

Because some statute-of-limitation laws set deadlines for filing civil and criminal sex crime cases, it's difficult to bring them years later, said Marci Hamilton, a University of Pennsylvania professor who is working to ease those restrictions across the country.

Ghislaine Maxwell, daughter of a British press magnate and Jeffrey Epstein's close associate when he was inviting underage girls into his bedroom, leads a TED Talk on environmental issues.

But she points out that there has been no statute of limitations for federal sex crimes involving children since 2002.

Children who are sexually abused often take decades to reveal what happened to them, in part because their brains aren't wired at a young age to understand the trauma they've experienced, said Kenneth V. Lanning, a retired FBI agent who investigated and studied child sex crimes for 40 years.

"We want to hold children to some superhuman standard because they behave this way. In reality, police, prosecutors and judges have to understand that children are not all angels from heaven. They are just plain human beings who are emotionally immature so we have to protect them from their own decisions.''

Wild, who continues to fight her federal case on behalf of all of Epstein's victims, said she hopes that the federal judge hearing the Crime Victims' Rights case will make a ruling soon, one that will send a message to prosecutors who fail to consider the rights of crime victims.

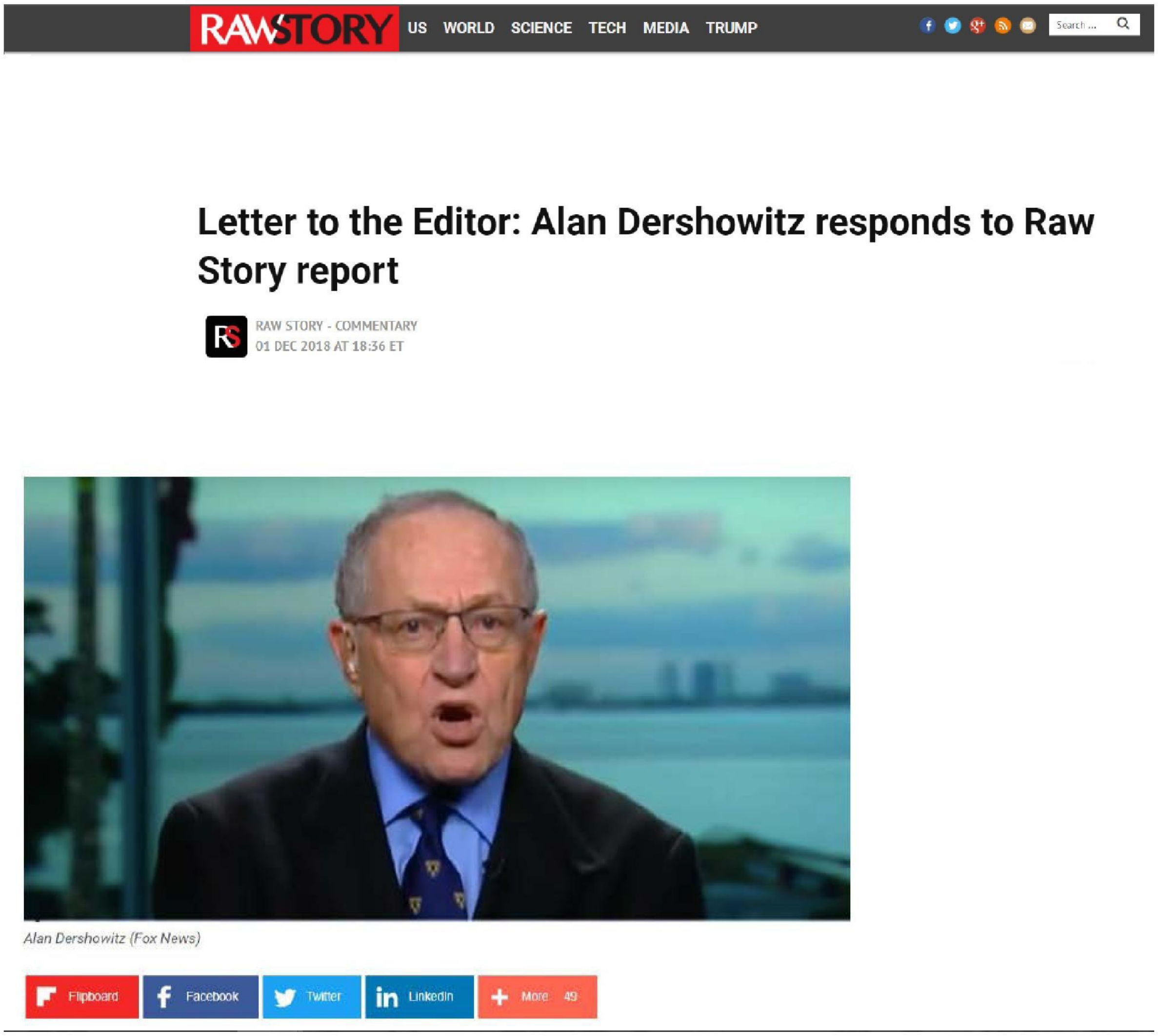
"Really if you think about this too hard, it's scary because this is our government that is supposed to protect us but has done everything to protect a pedophile,'' she said.

Support investigative journalism

The Miami Herald obtained thousands of FBI and court records, lawsuits, and witness depositions, and went to federal court in New York to access sealed documents in the reporting of "Perversion of Justice." The Herald also tracked down more than 60 women who said they were victims, some of whom had never spoken of the abuse before.

Your digital subscription, starting at $0.99 for the first month, supports investigative journalism like this.

EXHIBIT 2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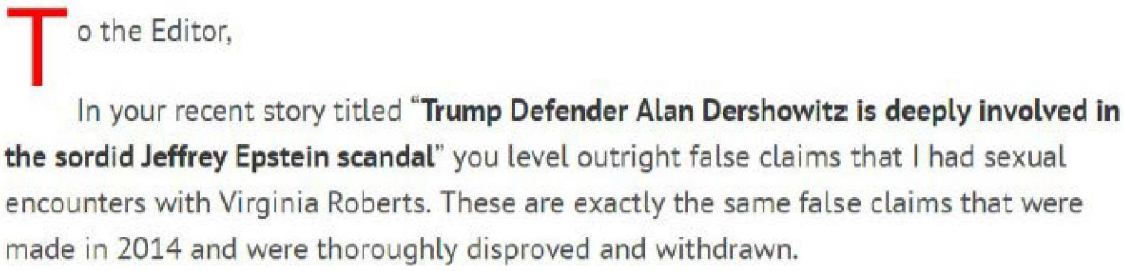
Letter to the Editor: Alan Dershowitz responds to Raw Story report

RAW STORY - COMMENTARY
01 DEC 2018 AT 18:36 ET

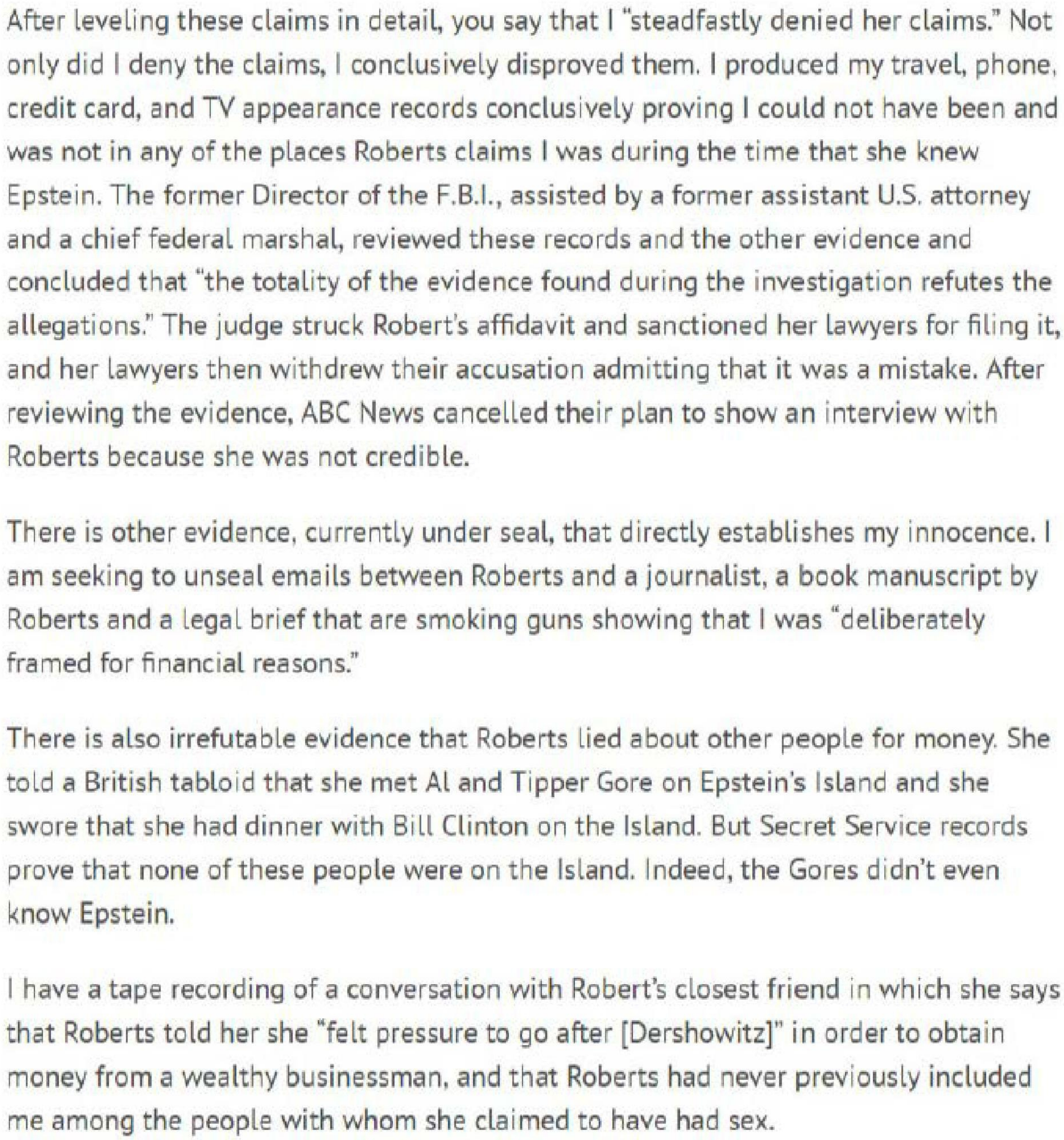
Alan Dershowitz (Fox News)



To the Editor,

In your recent story titled "**Trump Defender Alan Dershowitz is deeply involved in the sordid Jeffrey Epstein scandal**" you level outright false claims that I had sexual encounters with Virginia Roberts. These are exactly the same false claims that were made in 2014 and were thoroughly disproved and withdrawn.

https://www.rawstory.com/2018/12/letter-editor-alan-dershowitz-responds-raw-story-report/



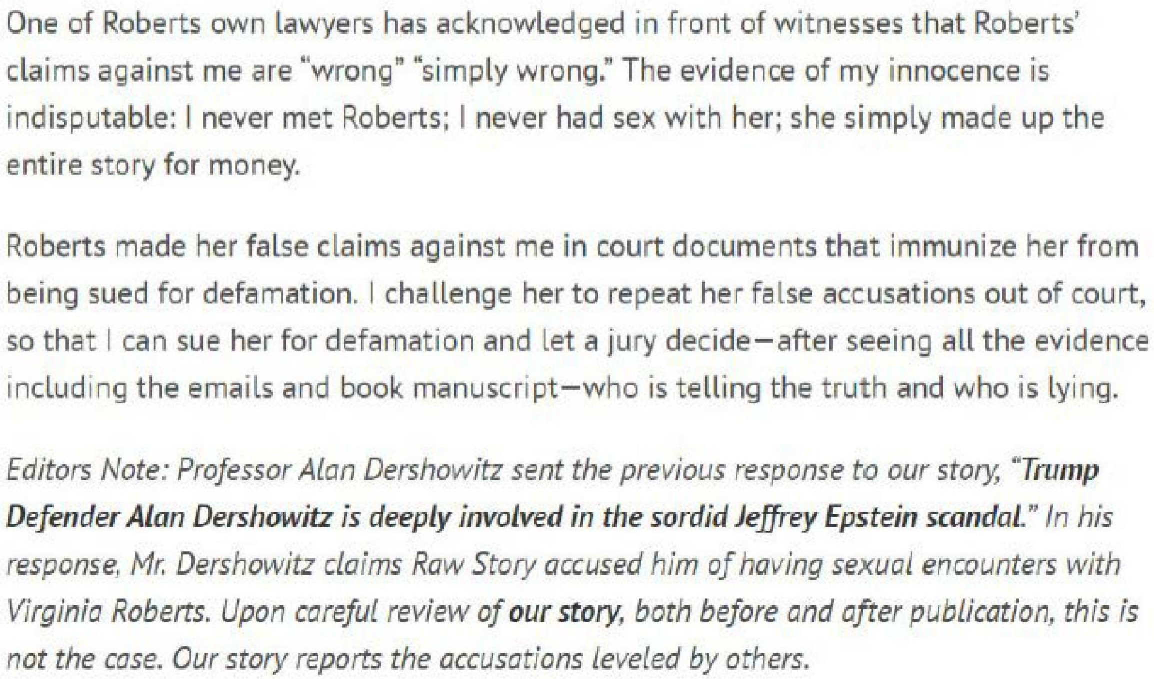
After leveling these claims in detail, you say that I "steadfastly denied her claims." Not only did I deny the claims, I conclusively disproved them. I produced my travel, phone, credit card, and TV appearance records conclusively proving I could not have been and was not in any of the places Roberts claims I was during the time that she knew Epstein. The former Director of the F.B.I., assisted by a former assistant U.S. attorney and a chief federal marshal, reviewed these records and the other evidence and concluded that "the totality of the evidence found during the investigation refutes the allegations." The judge struck Robert's affidavit and sanctioned her lawyers for filing it, and her lawyers then withdrew their accusation admitting that it was a mistake. After reviewing the evidence, ABC News cancelled their plan to show an interview with Roberts because she was not credible.

There is other evidence, currently under seal, that directly establishes my innocence. I am seeking to unseal emails between Roberts and a journalist, a book manuscript by Roberts and a legal brief that are smoking guns showing that I was "deliberately framed for financial reasons."

There is also irrefutable evidence that Roberts lied about other people for money. She told a British tabloid that she met Al and Tipper Gore on Epstein's Island and she swore that she had dinner with Bill Clinton on the Island. But Secret Service records prove that none of these people were on the Island. Indeed, the Gores didn't even know Epstein.

I have a tape recording of a conversation with Robert's closest friend in which she says that Roberts told her she "felt pressure to go after [Dershowitz]" in order to obtain money from a wealthy businessman, and that Roberts had never previously included me among the people with whom she claimed to have had sex.

https://www.rawstory.com/2018/12/letter-editor-alan-dershowitz-responds-raw-story-report/



One of Roberts own lawyers has acknowledged in front of witnesses that Roberts' claims against me are "wrong" "simply wrong." The evidence of my innocence is indisputable: I never met Roberts; I never had sex with her; she simply made up the entire story for money.

Roberts made her false claims against me in court documents that immunize her from being sued for defamation. I challenge her to repeat her false accusations out of court, so that I can sue her for defamation and let a jury decide—after seeing all the evidence including the emails and book manuscript—who is telling the truth and who is lying.

*Editors Note: Professor Alan Dershowitz sent the previous response to our story, "**Trump Defender Alan Dershowitz is deeply involved in the sordid Jeffrey Epstein scandal.**" In his response, Mr. Dershowitz claims Raw Story accused him of having sexual encounters with Virginia Roberts. Upon careful review of **our story**, both before and after publication, this is not the case. Our story reports the accusations leveled by others.*

https://www.rawstory.com/2018/12/letter-editor-alan-dershowitz-responds-raw-story-report/

EXHIBIT 3

Alan Dershowitz: ‘I never had sex with Virginia Roberts’ | Miami Herald

miamiherald.com/opinion/letters-to-the-editor/article222532470.html

In its series on the Jeffrey Epstein case, “Perversion of Justice,” the Herald quotes an affidavit by Virginia Roberts — a woman I never met — claiming she had sex with me on Epstein’s island, ranch, plane and mansion. It then simply says I “denied” it.

In fact, I disproved it. I produced my travel, phone, credit card and TV appearance records, conclusively proving that I could not have been and was not in any of these places during the time Roberts knew Epstein. The former FBI director, assisted by a former assistant U.S. attorney and a chief federal marshal, reviewed these records and the other evidence and concluded that, “The totality of the evidence found during the investigation refutes the allegations.”

There is other evidence, currently under seal, that directly establishes my innocence. I am seeking to unseal emails between Roberts and a journalist, a book manuscript by Roberts and a legal brief that are smoking guns showing that I was “deliberately framed for financial reasons.”

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There is also irrefutable evidence that Roberts lied about other people for money. She told a British tabloid that she met Al and Tipper Gore on Epstein’s island and swore that she had dinner with Bill Clinton on the island. But Secret Service records prove that none of these people were on the island. Indeed, the Gores didn’t even know Epstein.

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I have a tape recording of a conversation with Roberts’ closest friend in which she says that Roberts told her she “felt pressure to go after [Dershowitz]” in order to obtain money from a wealthy businessman, and that Roberts had never previously included me among the people with whom she claimed to have had sex.

Finally, one of Roberts’ own lawyers has acknowledged in front of witnesses that her claims against me are “wrong” “simply wrong.”

The evidence of my innocence is indisputable: I never met Roberts; I never had sex with her; she simply made up the entire story for money.

Roberts made her false claims against me in court documents that immunize her from being sued for defamation. I challenge her to repeat her false accusations out of court, so that I can sue her for defamation and let a jury decide — after seeing all the evidence, including the suppressed emails and book manuscript — who is telling the truth and who is lying.

EXHIBIT 4

Dershowitz Goes Off on Woman Who Made Underage Sex Allegations: ‘She Should Be Seriously Punished’

by Ronn Blitzer | 2:26 pm, December 4th, 2018

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JEFFREY EPSTEIN CIVIL CASE SETTLED
00:34
10:57

Just hours after convicted pedophile **Jeffrey Epstein** agreed to settle a civil case brought against him by attorney **Bradley Edwards**, Epstein’s lawyer from his past criminal case, **Alan Dershowitz**, discussed his former client on the Law&Crime Network. Epstein was accused of trafficking more than 40 underage girls for sex, and one such girl claimed Dershowitz himself had sex with her when she was underage.

Dershowitz vehemently denies the claim, telling host **Brian Ross** that accuser **Virginia Roberts** is a “certified, complete, total liar,” and that her allegations are a “complete and total fabrication.” He also added that she should be punished by the law for what she did.

The Harvard Law Professor Emeritus noted that Roberts’ allegations were eventually withdrawn, and that the FBI recognized the evidence showed he was not where she said he was. He pointed to documented evidence that proves he is innocent.

“I can prove conclusively that she made the whole thing up,” Dershowitz said, citing travel records that he says prove where he was at the time she claims she had sex with him. “It’s conclusive, conclusive evidence.”

“More importantly, I can prove where I wasn’t,” he said, after stating outright, “Never met her, don’t know who she is, never heard of her.”

Similarly, Dershowitz said that Roberts claimed that notable figures such as **Bill Clinton**, **Al Gore**, and **Tipper Gore** were present on an island, when Secret Service records proved they were never even there.

Dershowitz said Roberts' allegations were part of an extortion plot, and that she "should be seriously punished for submitting false information and a false affidavit."

The attorney emphasized that Roberts has not been willing to repeat her allegations against him in public, and that she has only accused him in the context of litigation, which affords certain protections.

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"She simply hides behind litigation privileges," Dershowitz said, encouraging Ross to call Roberts and see if she would repeat her claims. "And if she does, I will be in court the next day suing her for defamation and I will win the case 'cause I can prove conclusively that she made up the whole story from top to bottom."

Ross then turned to the controversial deal that Epstein received from federal prosecutors who were investigating the trafficking case against him. Federal prosecutors agreed not to prosecute him, and let him plead guilty to state charges that resulted in a 13-month prison sentence that allowed Epstein to leave prison during the day for work. Federal prosecutors allegedly did not even inform victims before making the deal, which is now the subject of a request for an Inspector General investigation. Congressional Democrats said in a letter that they want to know more about the circumstances surrounding the deal, which was made by then-U.S. Attorney and current Secretary of Labor **Alex Acosta**.

As Epstein's defense attorney in that case, Dershowitz is not upset about it the deal at all.

"I'm very proud of that deal, that's what lawyers are supposed to do," he said. "Lawyers are supposed to get the best deals they can." If he could have gotten 10 months or no time at all, that would have been even better, he said.

Acosta said in the past that Epstein's lawyers, including Dershowitz, put pressure on his office by investigating his staff. Dershowitz has denied this.

"Acosta was very tough," Dershowitz said, contrary to concerns that he did anything improper. Dershowitz pointed out that the problem feds had was proving that girls were transported in interstate commerce.

“Unless you can prove that, you don’t have a federal case, only a state case.”

[Image via Law & Crime Network screengrab]

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Alan Dershowitz, Jefrey Epstein

EXHIBIT 5

Letters

Letter to the Editor: Article Misrepresented Dershowitz

2

By Alan M. Dershowitz
Alan M. Dershowitz is a Professor of Law emeritus at Harvard Law School.

December 5, 2018

To the editor,

The Crimson story regarding Jeffrey Epstein omitted the central point I made in my interview with the reporter. I welcome an investigation by Harvard or any other institution, including prosecutors, into the wilfully false charges made by Virginia Roberts for financial gain. Omitting this crucial statement is irresponsible and unethical journalism.

Virginia Roberts leveled her false accusations four years ago. At the time, I disproved them categorically. The matter was put to rest, with even her lawyers admitting that it was a mistake and wrong. Then four years later the Miami Herald recycled this false accusation and The Crimson reported on the Herald's recycled report. I wrote a letter to the editor of the Herald pointing to the incontrovertible evidence that Roberts made up the accusation out of whole cloth in order to obtain millions of dollars from Leslie Wexner.

I was able to disprove Roberts' false accusation by producing all of my travel, AmEx, and TV appearance records which showed where I was, and, more importantly, where I wasn't during the entire period Virginia Roberts was in contact with Jeffrey Epstein. These records prove incontrovertibly that I could not have been, and was not, where Roberts' falsely claimed to have met me — a Caribbean Island, a New Mexico Ranch, a private jet, a Palm Beach mansion — during the relevant time period.

I also called for an independent investigation by the former Director of the F.B.I., a highly respected former federal judge and assistant U.S. attorney. He reviewed all of the records and other evidence and concluded that "the totality of the evidence … refutes the allegations."

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In addition, the judge before whom the accusation was made struck the accusation from the record and sanctioned her lawyers for filing it. One of her own lawyers then acknowledged that his client was “wrong” “simply wrong,” and her other lawyers formally withdrew the accusation, admitting it was a “mistake.”

Not only did Virginia Roberts lie about me, she lied about Al and Tipper Gore and President Bill Clinton claiming that she met the three of them on Jeffrey Epstein’s island — a claim refuted by secret service records that established that none of the three were on that island during that period of time.

There is evidence that directly proves I was framed. These include emails between Roberts and a journalist, a book manuscript by Roberts and a legal brief that are smoking guns showing that I was “deliberately framed for financial reasons.” These exculpatory documents have been sealed by Roberts’ lawyers and I am seeking to make them public.

Roberts' closest friend told me that Roberts told her she “felt pressure to go after [Dershowitz]” in order to obtain money from Leslie Wexner and that Roberts had never previously included me among the people with whom she claimed to have had sex. I have a tape recording of this conversation.

Not surprisingly, Roberts made her false claims against me only in court documents that immunize her from being sued for defamation. When she was interviewed by the Miami Herald, she refused to repeat her false allegations outside of court. The Crimson did not ask her directly to repeat her false allegations to them. As a matter of journalistic ethics, The Crimson should not have published an accusation without interviewing the accuser on the record. I now challenge Roberts to repeat her false accusations to The Crimson or other media, so that I can sue her for defamation and let a jury decide — after seeing all the evidence including the emails and book manuscript — who is telling the truth and who is lying.

I want an investigation or trial to finally prove that Roberts made up the entire story, so that it can finally be put to rest.

Alan M. Dershowitz is a Professor of Law emeritus at Harvard Law School.

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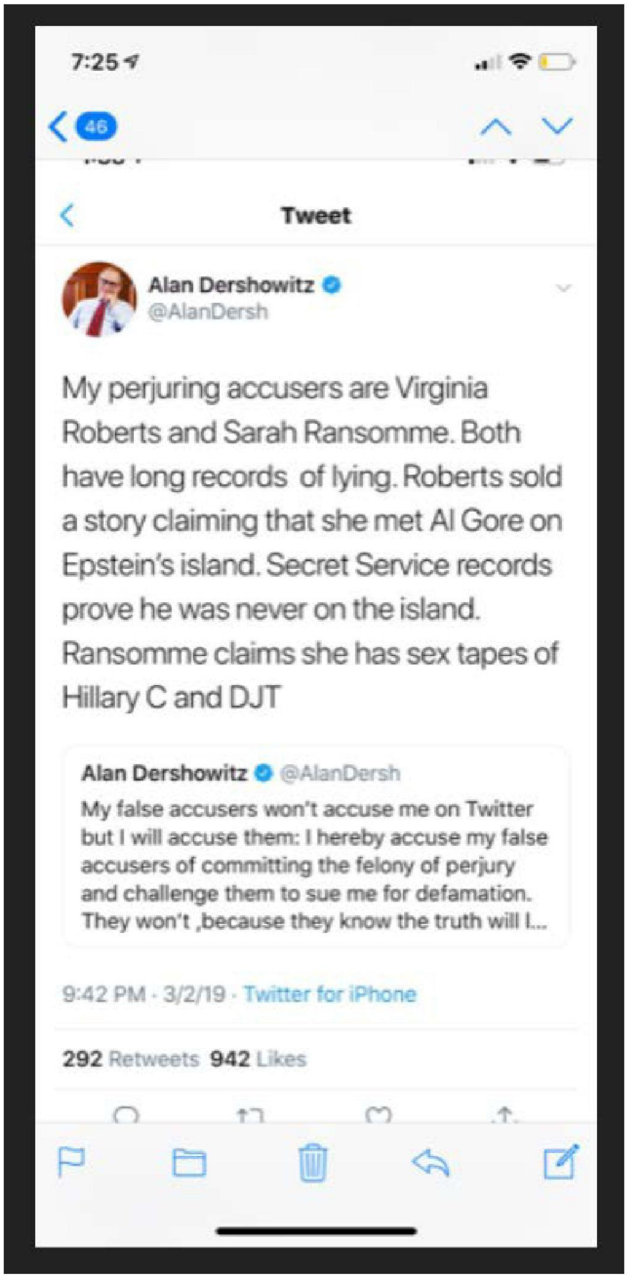
EXHIBIT 6



Alan Dershowitz
@AlanDersh

My perjuring accusers are Virginia Roberts and Sarah Ransomme. Both have long records of lying. Roberts sold a story claiming that she met Al Gore on Epstein's island. Secret Service records prove he was never on the island. Ransomme claims she has sex tapes of Hillary C and DJT

Alan Dershowitz @AlanDersh
My false accusers won't accuse me on Twitter but I will accuse them: I hereby accuse my false accusers of committing the felony of perjury and challenge them to sue me for defamation. They won't ,because they know the truth will l...

9:42 PM · 3/2/19 · Twitter for iPhone

292 Retweets **942** Likes

https://twitter.com/AlanDersh

EXHIBIT 7

LAW OFFICE OF GUY FRONSTIN
515 N. FLAGLER DRIVE, SUITE 300 PAVILION
WEST PALM BEACH, FL 33401
(561) 447-4011 * (561) 802-4121 (Fax)

SENT VIA FACSIMILE TRANSMISSION

January 13, 2006

Lanna Belohlavek, ASA
Office of the State Attorney
401 N. Dixie Highway
West Palm Beach, FL 33401

Re: Jeffrey Epstein

Dear Lanna:

Please allow this letter to serve as formal notice that I represent Mr. Jeffrey Epstein in regard to the investigation your office is conducting of Mr. Epstein. Additionally, Alan Dershowitz, Esq., who is a close friend of Mr. Epstein's, is serving as counsel to me in my representation of Mr. Epstein. Mr. Dershowitz is working closely with me on this matter and, in the event charges are filed, will likely petition to enter an appearance Pro Hac Vice along with other counsel.

I appreciate the dialogue you have permitted throughout this investigation. I trust you will still invite me for a pre-filing interview in the event the State decides it has enough evidence to charge Mr. Epstein with a crime.

I look forward to continuing to work with you on this matter.

Very truly yours,

Guy P. Fronstin, Esq.
GPF/mw

EXHIBIT 8

http://www.vanityfair.com/news/2003/03/jeffrey-epstein-200303

Society

The Talented Mr. Epstein

Lately, Jeffrey Epstein's high-flying style has been drawing oohs and aahs: the bachelor financier lives in New York's largest private residence, claims to take only billionaires as clients, and flies celebrities including Bill Clinton and Kevin Spacey on his Boeing 727. But pierce his air of mystery and the picture changes. Vicky Ward explores Epstein's investment career, his ties to retail magnate Leslie Wexner, and his complicated past.

by

- Vicky Ward

June 27, 2011 12:00 am

On Manhattan's Upper East Side, home to some of the most expensive real estate on earth, exists the crown jewel of the city's residential town houses. With its 15-foot-high oak door, huge arched windows, and *nine* floors, it sits on—or, rather, commands—the block of 71st Street between Fifth and Madison Avenues. Almost ludicrously out of proportion with its four- and five-story neighbors, it seems more like an institution than a house. This is perhaps not surprising—until 1989 it was the Birch Wathen private school. Now it is said to be Manhattan's largest private residence.

Inside, amid the flurry of menservants attired in sober black suits and pristine white gloves, you feel you have stumbled into someone's private Xanadu. This is no mere rich person's home, but a high-walled, eclectic, imperious fantasy that seems to have no boundaries.

The entrance hall is decorated not with paintings but with row upon row of individually framed eyeballs; these, the owner tells people with relish, were imported from England, where they were made for injured soldiers. Next comes a marble foyer, which does have a painting, in the manner of Jean Dubuffet … but the host coyly refuses to tell visitors who painted it. In any case, guests are like pygmies next to the nearby twice-life-size sculpture of a naked African warrior.

Despite its eccentricity the house is curiously impersonal, the statement of someone who wants to be known for the scale of his possessions. Its occupant, financier Jeffrey Epstein, 50, admits to friends that he likes it when people think of him this way. A good-looking man, resembling Ralph Lauren, with thick gray-white hair and a weathered face, he usually dresses in jeans, knit shirts, and loafers. He tells people he bought the house because he knew he "could never live anywhere bigger." He thinks 51,000 square feet is an appropriately large space for someone like himself, who deals mostly in large concepts—especially large sums of money.

Guests are invited to lunch or dinner at the town house—Epstein usually refers to the former as "tea," since he likes to eat bite-size morsels and drink copious quantities of Earl Grey. (He does not touch alcohol or tobacco.) Tea is served in the "leather room," so called because of the cordovan-colored fabric on the walls. The chairs are covered in a leopard print, and on the wall hangs a huge, Oriental fantasy of a woman holding an opium pipe and caressing a snarling lionskin. Under her gaze, plates of finger sandwiches are delivered to Epstein and guests by the menservants in white gloves.

Upstairs, to the right of a spiral staircase, is the "office," an enormous gallery spanning the width of the house. Strangely, it holds no computer. Computers belong in the "computer room" (a smaller room at the back of the house), Epstein has been known to say. The office features a gilded desk (which Epstein tells people belonged to banker J. P. Morgan), 18th-century black lacquered Portuguese cabinets, and a nine-foot ebony Steinway "D" grand. On the desk, a paperback copy of the Marquis de Sade's *The Misfortunes of Virtue* was recently spotted. Covering the floor, Epstein has explained, "is the largest Persian rug you'll ever see in a private home—so big, it must have come from a mosque." Amid such splendor, much of which reflects the work of the French decorator Alberto Pinto, who has worked for Jacques Chirac and the royal families of Jordan and Saudi Arabia, there is one particularly startling oddity: a stuffed black poodle, standing atop the grand piano. "No decorator would ever tell you to do that," Epstein brags to visitors. "But I want people to think what it means to stuff a dog." People can't help but feel it's Epstein's way of saying that he always has the last word.

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In addition to the town house, Epstein lives in what is reputed to be the largest private dwelling in New Mexico, on an $18 million, 7,500-acre ranch which he named "Zorro." "It makes the town house look like a shack," Epstein has said. He also owns Little St. James, a 70-acre island in the U.S. Virgin Islands, where the main house is currently being renovated by Edward Tuttle, a designer of the Amanresorts. There is also a $6.8 million house in Palm Beach, Florida, and a fleet of aircraft: a Gulfstream IV, a helicopter, and a Boeing 727, replete with trading room, on which Epstein recently flew President Clinton, actors Chris Tucker and Kevin Spacey, supermarket magnate Ron Burkle, Lew Wasserman's grandson, Casey Wasserman, and a few others, on a mission to explore the problems of AIDS and economic development in Africa.

Epstein is charming, but he doesn't let the charm slip into his eyes. They are steely and calculating, giving some hint at the steady whir of machinery running behind them. "Let's play chess," he said to me, after refusing to give an interview for this article. "You be white. You get the first move." It was an appropriate metaphor for a man who seems to feel he can win no matter what the advantage of the other side. *His* advantage is that no one really seems to know him or his history completely or what his arsenal actually consists of. He has carefully engineered it so that he remains one of the few truly baffling mysteries among New York's moneyed world. People know snippets, but few know the whole.

"He's very enigmatic," says Rosa Monckton, the former C.E.O. of Tiffany & Co. in the U.K. and a close friend since the early 1980s. "You think you know him and then you peel off another ring of the onion skin and there's something else extraordinary underneath. He never reveals his hand…. He's a classic iceberg. What you see is not what you get."

Even acquaintances sense a curious dichotomy: Yes, he lives like a "modern maharaja," as Leah Kleman, one of his art dealers, puts it. Yet he is fastidiously, almost obsessively private—he lists himself in the phone book under a pseudonym. He rarely attends society gatherings or weddings or funerals; he considers eating in restaurants like "eating on the subway"—i.e., something he'd never do. There are many women in his life, mostly young, but there is no one of them to whom he has been able to commit. He describes his most public companion of the last decade, Ghislaine Maxwell, 41, the daughter of the late, disgraced media baron Robert Maxwell, as simply his "best friend." He says she is not on his payroll, but she seems to organize much of his life—recently she was making telephone inquiries to find a California-based yoga instructor for him. (Epstein is still close to his two other long-term girlfriends, Paula Heil Fisher, a former associate of his at the brokerage firm Bear Stearns and now an opera producer, and Eva Andersson Dubin, a doctor and onetime model. He tells people that when a relationship is over the girlfriend "moves up, not down," to friendship status.)

Some of the businessmen who dine with him at his home—they include newspaper publisher Mort Zuckerman, banker Louis Ranieri, Revlon chairman Ronald Perelman, real-estate tycoon Leon Black, former Microsoft executive Nathan Myhrvold, Tom Pritzker (of Hyatt Hotels), and real-estate personality Donald Trump—sometimes seem not all that clear as to what he actually does to earn his millions. Certainly, you won't find Epstein's transactions written about on Bloomberg or talked about in the trading rooms. "The trading desks don't seem to know him. It's unusual for animals *that* big not to leave any footprints in the snow," says a high-level investment manager.

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Unlike such fund managers as George Soros and Stanley Druckenmiller, whose client lists and stock maneuverings act as their calling cards, Epstein keeps all his deals and clients secret, bar one client: billionaire Leslie Wexner, the respected chairman of Limited Brands. Epstein insists that ever since he left Bear Stearns in 1981 he has managed money only for billionaires—who depend on him for discretion. "I was the only person crazy enough, or arrogant enough, or misplaced enough, to make my limit a billion dollars or more," he tells people freely. According to him, the flat fees he receives from his clients, combined with his skill at playing the currency markets "with very large sums of money," have afforded him the lifestyle he enjoys today.

Why do billionaires choose him as their trustee? Because the problems of the mega-rich, he tells people, are different from yours and mine, and his unique philosophy is central to understanding those problems: "Very few people need any more money when they have a billion dollars. The key is not to have it do harm more than anything else.… You don't want to lose your money."

He has likened his job to that of an architect—more specifically, one who specializes in remodeling: "I always describe [a billionaire] as someone who started out in a small home and as he became wealthier had add-ons. He added on another addition, he built a room over the garage … until you have a house that is usually a mess.… It's a large house that has been put together over time where no one could foretell the financial future and their accompanying needs."

He makes it sound as though his job combines the roles of real-estate agent, accountant, lawyer, money manager, trustee, and confidant. But, as with Jay Gatsby, myths and rumor swirl around Epstein.

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Here are some of the hard facts about Epstein—ones that he doesn't mind people knowing: He grew up middle-class in Brooklyn. His father worked for the city's parks department. His parents viewed education as "the way out" for him and his younger brother, Mark, now working in real estate. Jeffrey started to play the piano—for which he maintains a passion—at five, and he went to Brooklyn's Lafayette High School. He was good at mathematics, and in his early 20s he got a job teaching physics and math at Dalton, the elite Manhattan private school. While there he began tutoring the son of Bear Stearns chairman Ace Greenberg and was friendly with a daughter of Greenberg's. Soon he went to Bear Stearns, where, under the mentorship of both Greenberg and current Bear Stearns C.E.O. James Cayne, he did well enough to become a limited partner—a rung beneath full partner. He abruptly departed in 1981 because, he has said, he wanted to run his own business.

Thereafter the details recede into shadow. A few of the handful of current friends who have known him since the early 1980s recall that he used to tell them he was a "bounty hunter," recovering lost or stolen money for the government or for very rich people. He has a license to carry a firearm. For the last 15 years, he's been running his business, J. Epstein & Co.

Since Leslie Wexner appeared in his life—Epstein has said this was in 1986; others say it was in 1989, at the earliest—he has gradually, in a way that has not generally made headlines, come to be accepted by the Establishment. He's a member of various commissions and councils: he is on the Trilateral Commission, the Council on Foreign Relations, the New York Academy of Sciences, and the Institute of International Education.

His current fan club extends to Cayne, Henry Rosovsky, the former dean of Harvard's Faculty of Arts and Sciences, and Larry Summers, Harvard's current president. Harvard law professor Alan Dershowitz says, "I'm on my 20th book…. The only person outside of my immediate family that I send drafts to is Jeffrey." Real-estate developer and philanthropist Marshall Rose, who has worked with Epstein on projects in New Albany, Ohio, for Wexner, says, "He digests and decodes the information very rapidly, which is to me terrific because we have shorter meetings."

Also on the list of admirers are former senator George Mitchell and a gaggle of distinguished scientists, most of whom Epstein has helped fund in recent years. They include Nobel Prize winners Gerald Edelman and Murray Gell-Mann, and mathematical biologist Martin Nowak. When these men describe Epstein, they talk about "energy" and "curiosity," as well as a love for theoretical physics that they don't ordinarily find in laymen. Gell-Mann rather sweetly mentions that "there are always pretty ladies around" when he goes to dinner *chez* Epstein, and he's under the impression that Epstein's clients include the Queen of England. Both Nowak and Dershowitz were thrilled to find themselves shaking the hand of a man named "Andrew" in Epstein's house. "Andrew" turned out to be Prince Andrew, who subsequently arranged to sit in the back of Dershowitz's law class.

Epstein gets annoyed when anyone suggests that Wexner "made him." "I had really rich clients before," he has said. Yet he does not deny that he and Wexner have a special relationship. Epstein sees it as a partnership of equals. "People have said it's like we have one brain between two of us: each has a side."

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“I think we both possess the skill of seeing patterns,” says Wexner. “But Jeffrey sees patterns in politics and financial markets, and I see patterns in lifestyle and fashion trends. My skills are not in investment strategy, and, as everyone who knows Jeffrey knows, his are not in fashion and design. We frequently discuss world trends as each of us sees them.”

By the time Epstein met Wexner, the latter was a retail legend who had built a $3 billion empire—one that now includes Victoria’s Secret, Express, and Bath & Body Works—from $5,000 lent him by his aunt. “Wexner saw in Jeffrey the type of person who had the potential to realize his [Jeffrey’s] dreams,” says someone who has worked closely with both men. “He gave Jeffrey the ball, and Jeffrey hit it out of the park.”

Wexner, through a trust, bought the town house in which Epstein now lives for a reported $13.2 million in 1989. In 1993, Wexner married Abigail Koppel, a 31-year-old lawyer, and the newlyweds relocated to Ohio; in 1996, Epstein moved into the town house. Public documents suggest that the house is still owned by the trust that bought it, but Epstein has said that he now owns the house.

Wexner trusts Epstein so completely that he has assigned him the power of fiduciary over all of his private trusts and foundations, says a source close to Wexner. In 1992, Epstein even persuaded Wexner to put him on the board of the Wexner Foundation in place of Wexner’s ailing mother. Bella Wexner recovered and demanded to be reinstated. Epstein has said they settled by splitting the foundation in two.

Epstein does not care that he comes between family members. In fact, he sees it as his job. He tells people, “I am there to represent my client, and if my client needs protecting—sometimes even from his own family—then it’s often better that people hate me, not the client.”

“You’ve probably heard I’m vicious in my representation of my clients,” he tells people proudly; Leah Kleman describes his haggling over art prices as something like a scene out of the movie *Mad Max: Beyond Thunderdome*. Even a former mentor says he’s seen “the dark side” of Epstein, and a Bear Stearns source recalls a meeting in which Epstein chewed out a team making a presentation for Wexner as being so brutal as to be “irresponsible.”

One reporter, in fact, received three threats from Epstein while preparing a piece. They were delivered in a jocular tone, but the message was clear: There will be trouble for your family if I don’t like the article.

On the other hand, Epstein is clearly very generous with friends. Joe Pagano, an Aspen-based venture capitalist, who has known Epstein since before his Bear Stearns days, can’t say enough nice things: “I have a boy who’s dyslexic, and Jeffrey’s gotten close to him over the years…. Jeffrey got him into music. He bought him his first piano. And then as he got to school he had difficulty … in studying … so Jeffrey got him interested in taking flying lessons.”

Rosa Monckton recalls Epstein telling her that her daughter, Domenica, who suffers from Down syndrome, needed the sun, and that Rosa should feel free to bring her to his house in Palm Beach anytime.

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Some friends remember that in the late 80s Epstein would offer to upgrade the airline tickets of good friends by affixing first-class stickers; the only problem was that the stickers turned out to be unofficial. Sometimes the technique worked, but other times it didn't, and the unwitting recipients found themselves exiled to coach. (Epstein has claimed that he paid for the upgrades, and had no knowledge of the stickers.) Many of those who benefited from Epstein's largesse claim that his generosity comes with no strings attached. "I never felt he wanted anything from me in return," says one old friend, who received a first-class upgrade.

Epstein is known about town as a man who loves women—lots of them, mostly young. Model types have been heard saying they are full of gratitude to Epstein for flying them around, and he is a familiar face to many of the Victoria's Secret girls. One young woman recalls being summoned by Ghislaine Maxwell to a concert at Epstein's town house, where the women seemed to outnumber the men by far. "These were not women you'd see at Upper East Side dinners," the woman recalls. "Many seemed foreign and dressed a little bizarrely." This same guest also attended a cocktail party thrown by Maxwell that Prince Andrew attended, which was filled, she says, with young Russian models. "Some of the guests were horrified," the woman says.

"He's reckless," says a former business associate, "and he's gotten more so. Money does that to you. He's breaking the oath he made to himself—that he would never do anything that would expose him in the media. Right now, in the wake of the publicity following his trip with Clinton, he must be in a very difficult place."

According to S.E.C. and other legal documents unearthed by *VANITY FAIR,* Epstein may have good reason to keep his past cloaked in secrecy: his real mentor, it might seem, was not Leslie Wexner but Steven Jude Hoffenberg, 57, who, for a few months before the S.E.C. sued to freeze his assets in 1993, was trying to buy the *New York Post.* He is currently incarcerated in the Federal Medical Center in Devens, Massachusetts, serving a 20-year sentence for bilking investors out of more than $450 million in one of the largest Ponzi schemes in American history.

When Epstein met Hoffenberg in London in the 1980s, the latter was the charismatic, audacious head of the Towers Financial Corporation, a collection agency that was supposed to buy debts that people owed to hospitals, banks, and phone companies. But Hoffenberg began using company funds to pay off earlier investors and service a lavish lifestyle that included a mansion on Long Island, homes on Manhattan's Sutton Place and in Florida, and a fleet of cars and planes.

Hoffenberg and Epstein had much in common. Both were smart and obsessed with making money. Both were from Brooklyn. According to Hoffenberg, the two men were introduced by Douglas Leese, a defense contractor. Epstein has said they were introduced by John Mitchell, the late attorney general.

Epstein had been running International Assets Group Inc. (I.A.G.), a consulting company, out of his apartment in the Solo building on East 66th Street in New York. Though he has claimed that he managed money for billionaires only, in a 1989 deposition he testified that he spent 80 percent of his time assisting people recover stolen money from fraudulent brokers and lawyers.

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He was also not above entering into risky, tax-sheltered oil and gas deals with much smaller investors. A lawsuit that Michael Stroll, the former head of Williams Electronics Inc., filed against Epstein shows that in 1982 I.A.G. received an investment from Stroll of $450,000, which Epstein put into oil. In 1984 Stroll asked for his money back; four years later he had received only $10,000. Stroll lost the suit, after Epstein claimed in court, among other things, that the check for $10,000 was for a horse he'd bought from Stroll. "My net worth never exceeded four and a half million dollars," Stroll has said.

Hoffenberg, says a close friend, "really liked Jeffrey…. Jeffrey has a way of getting under your skin, and he was under Hoffenberg's." Also appealing to Hoffenberg were Epstein's social connections; they included oil mogul Cece Wang (father of the designer Vera) and Mohan Murjani, whose clothing company grew into Gloria Vanderbilt Jeans. Epstein lived large even then. One friend recalls that when he took Canadian heiress Wendy Belzberg on a date he hired a Rolls-Royce especially for the occasion. (Epstein has claimed he owned it.)

In 1987, Hoffenberg, according to sources, set Epstein up in the offices he still occupies in the Villard House, on Madison Avenue, across a courtyard from the restaurant Le Cirque. Hoffenberg hired his new protégé as a consultant at $25,000 a month, and the relationship flourished. "They traveled everywhere together—on Hoffenberg's plane, all around the world, they were always together," says a source. Hoffenberg has claimed that Epstein confided in him, saying, for example, that he had left Bear Stearns in 1981 after he was discovered executing "illegal operations."

Several of Epstein's Bear Stearns contemporaries recall that Epstein left the company very suddenly. Within the company there were rumors also that he was involved in a technical infringement, and it was thought that the executive committee asked that he resign after his two supporters, Ace Greenberg and Jimmy Cayne, were outnumbered. Greenberg says he can't recall this; Cayne denies it happened, and Epstein has denied it as well. "Jeffrey Epstein left Bear Stearns of his own volition," says Cayne. "It was never suggested that he leave by any member of management, and management never looked into any improprieties by him. Jeffrey said specifically, 'I don't want to work for anybody else. I want to work for myself.'" Yet, this is not the story that Epstein told to the S.E.C. in 1981 and to lawyers in a 1989 deposition involving a civil business case in Philadelphia.

In 1981 the S.E.C.'s Jonathan Harris and Robert Blackburn took Epstein's testimony and that of other Bear Stearns employees in part of what became a protracted case about insider trading around a tender offer placed on March 11, 1981, by the Seagram Company Ltd. for St. Joe Minerals Corp. Ultimately several Italian and Swiss investors were found guilty, including Italian financier Giuseppe Tome, who had used his relationship with Seagram owner Edgar Bronfman Sr. to obtain information about the tender offer.

After the tender offer was announced, the S.E.C. began investigating trades involving St. Joe at Bear Stearns and other firms. Epstein resigned from Bear Stearns on March 12. The S.E.C. was tipped off that Epstein had information on insider trading at Bear Stearns, and it was therefore obliged to question him. In his S.E.C. testimony, given on April 1, 1981, Epstein claimed that he had found "offensive" the way Bear Stearns management had handled a disciplinary action following its discovery that he had committed a possible “Reg D” violation—evidently he had lent money to his closest friend. (In the 1989 deposition he said that he’d lent approximately $20,000 to Warren Eisenstein, to buy stock.) Such an action could have been considered improper, although Epstein claimed he had not realized this until afterward.

According to Epstein, Bear Stearns management had questioned him about the loan around March 4. The questioners, Epstein said, were Michael (Mickey) Tarnopol and Alvin Einbender. In his 1989 deposition Epstein recalled that the partner who had made an “issue” of the matter was Marvin Davidson. On March 9, Epstein said, he had met with Tarnopol and Einbender again, and the two partners told him that the executive committee had weighed the offense, together with previous “carelessness” over expenses, and he would be fined $2,500.

“There was discussion whether, in fact, I had ever put in an airline ticket for someone else and not myself and I said that it was possible, … since my secretary handles my expenses,” Epstein told the S.E.C. In his 1989 testimony he stated that the “Reg D” incident had cost him a shot at partnership that year.

What the S.E.C. seemed to be especially interested in was whether there was a connection between Epstein’s leaving and the alleged insider trading in St. Joe Minerals by other people at Bear Stearns:

Q: Sir, are you aware that certain rumors may have been circulating around your firm in connection with your reasons for leaving the firm?

A: I’m aware that there were many rumors.

Q: What were the rumors you heard?

A: Nothing to do with St. Joe.

Q: Can you relate what you heard?

A: It was having to do with an illicit affair with a secretary.

Q: Have you heard any other rumors suggesting that you had made a presentation or communication to the Executive Committee concerning alleged improprieties by other members or employees of Bear Stearns?

A: I, in fact, have heard that rumor, but it’s been from Mr. Harris in our conversation last week.

Q: Have you heard it from anyone else?

A: No.

A little later the interview focuses on James Cayne:

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Q: Did you ever hear while you were at Bear Stearns that Mr. Cayne may have trader or insider information in connection with St. Joe Minerals Corporation?

Q: Did Mr. Cayne ever have any conversation with you about St. Joe Minerals?

Q: Did you happen to overhear any conversations between Mr. Cayne and anyone else regarding St. Joe Minerals?

And still later in the questioning comes this exchange:

Q: Have you had any type of business dealings with Mr. Cayne?

A: There's no relationship with Bear Stearns.

Q: Pardon?

A: Other than Bear Stearns, no.

Q: Have you been a participant in any type of business venture with Mr. Cayne?

Q: Do you have any expectation of participating in any business venture with Mr. Cayne?

Q: Have you had any business participations with Mr. Theram?

A: No; nor do I anticipate any.

Q: Mr. Epstein, did anyone at Bear Stearns tell you in words or substance that you should not divulge anything about St. Joe Minerals to the staff of the Securities and Exchange Commission?

Q: Has anyone indicated to you in any way, either directly or indirectly, in words or substance, that your compensation for this past year or any future monies coming to you from Bear Stearns will be contingent upon your not divulging information to the Securities and Exchange Commission?

A: No.

Despite the circumstances of Epstein's leaving, Bear Stearns agreed to pay him his annual bonus—which he anticipated as being approximately $100,000.

The S.E.C. never brought any charges against anyone at Bear Stearns for insider trading in St. Joe, but its questioning seems to indicate that it was skeptical of Epstein's answers. Some sources have wondered why, if he was such a big producer at Bear Stearns, he would have given it up over a mere $2,500 fine.

Certainly the years after Epstein left the firm were not obviously prosperous ones. His luck didn't seem to change until he met Hoffenberg.

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One of Epstein's first assignments for Hoffenberg was to mastermind doomed bids to take over Pan American World Airways in 1987 and Emery Air Freight Corp. in 1988. Hoffenberg claimed in a 1993 hearing before a grand jury in Illinois that Epstein came up with the idea of financing these bids through Towers's acquisition of two ailing Illinois insurance companies, Associated Life and United Fire. "He was hired by us to work on the securities side of the insurance companies and Towers Financial, supposedly to make a profit for us and for the companies," Hoffenberg reportedly told the grand jury. He also alleged that Epstein was the "technician," executing the schemes, although, having no broker's license, he had to rely on others to make the trades. Much of Hoffenberg's subsequent testimony in his criminal case has proven to be false, and Epstein has claimed he was merely asked how the bids could be accomplished and has said he had nothing to do with the financing of them. Yet Richard Allen, the former treasurer of United Fire, recalls seeing Epstein two or three times at the company. He and another executive say they had direct dealing with Epstein over the finances. And in his deposition of 1989, Epstein stated that he was the one who executed "all" Hoffenberg's instructions to buy and sell the stock. He called it "making the orders." He could not recall whether he had chosen the brokers used.

To win approval from the Illinois insurance regulators for Towers's acquisition of the companies, Hoffenberg promised to inject $3 million of new capital into them. In fact, in his grand-jury testimony Hoffenberg claimed that he, his chief operating officer, Mitchell Brater, and Epstein came up with a scheme to steal $3 million of the insurance companies' bonds to buy Pan Am and Emery stock. "Jeffrey Epstein and Mitch Brater arranged the various brokerage accounts for the bonds to be placed with in New York, and I think one in Chicago, Rodman & Renshaw," Hoffenberg reportedly said. Then, said Hoffenberg, while making it appear as though they were investing the bonds in much safer financial instruments, they used them as collateral to buy the stock. "Epstein was the person in charge of the transactions, and Mitchell Brater was assisting him with it in coordination on behalf of the insurance companies' money," Hoffenberg claimed at the time.

At one point, according to Hoffenberg, a broker forged the documents necessary for a $1.8 million check to be written on insurance-company funds. The check was used to buy more stock in the takeover targets. Meanwhile, in order to throw the insurance regulators off, the $1.8 million was reported as being safely invested in a money-market account.

United Fire's former chief financial officer Daniel Payton confirms part of Hoffenberg's account. He says he recalls making one or two telephone calls to Epstein (at Hoffenberg's direction) about the missing bonds. "He said, 'Oh, yeah, they still exist.' But we found out later that he had sold those assets … leveraged them … [and] used some margin account to take some positions in … Emery and Pan Am," says Payton.

Epstein's extraordinary creativity was, according to Hoffenberg, responsible for the purchase by the insurance companies of a $500,000 bond, with no money down. "Epstein created a great scheme to purchase a $500,000 treasury bond that would not be shown … [as] margined or collateralized," he reportedly told the grand jury. "It looked like it was free and clear but it actually wasn't," he said.

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Epstein has denied he ever had any dealings with anyone from the insurance companies. But Richard Allen says he recalls talking to Epstein at Hoffenberg's direction and telling him it was urgent they retrieve the missing bonds for a state examination. According to Allen, Epstein said, "We'll get them back." He had "kind of a flippant attitude," says Allen. "They never came back."

Epstein, according to Hoffenberg, also came up with a scheme to manipulate the price of Emery Freight stock in an attempt to minimize the losses that occurred when Hoffenberg's bid went wrong and the share price began to fall. This was alleged to have involved multiple clients' accounts controlled by Epstein.

Eventually, in 1991, insurance regulators in Illinois sued Hoffenberg. He settled the case, and Epstein, who was only a paid consultant, was never deposed or accused of any wrongdoing. Barry Gross, the attorney who was handling the suit for the regulators, says of Epstein, "He was very elusive…. It was hard to really track him down. There were a substantial number of checks for significant dollars that were paid to him, I remember…. He was this character we never got a handle on. Again we presumed that he was involved with the Pan Am and Emery run that Hoffenberg made, but we never got a chance to depose him."

"From the government's discovery in the main sentencing against Hoffenberg it would seem the government was perhaps a bit lazy," says David Lewis, who represented Mitchell Brater. "They went for what they knew they could get … and that was the fraudulent promissory notes [i.e., the much larger and unrelated part of Hoffenberg's fraud, based in New York State]…. What they couldn't get, they didn't bother with."

Another lawyer involved in the criminal prosecution of Hoffenberg says, "In a criminal investigation like that, when there is a guilty plea, to be quick and dirty about it, discovery is always incomplete…. They don't have to line up witnesses; they don't have to learn every fact that might come out on cross-examination."

Epstein was involved with Hoffenberg in other questionable transactions. Financial records show that in 1988 Epstein invested $1.6 million in Riddell Sports Inc., a company that manufactures football helmets. Among his co-investors were the theater mogul Robert Nederlander and attorney Leonard Toboroff. A source close to this transaction claims that Epstein told Nederlander and Toboroff that he had raised his share of the money from a Swiss banker, whose identity they could not be allowed to know. But Hoffenberg has claimed the money came from him, and Towers's financial statements for that year show a loan to Epstein of $400,000. (Epstein has said he can't remember the details and has disputed the accuracy of the Towers financial reports.)

Around the same time, Nederlander and Toboroff let Epstein come in with them on a scheme to make money out of Pennwalt, a Pennsylvania chemical company. The plan was to group together with two other parties to take a substantial declared position in the stock. According to a source, Epstein was supposed to help Nederlander and Toboroff raise $15 million. He seemed to fail to find other investors, say those familiar with the deal. (Epstein has said he was merely an investor.) He invested $1 million, which he told his co-investors was his own money. But in his

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1989 deposition he said that he put in only $300,000 of his own money. Where did the rest come from? Hoffenberg has said it came from him, in a loan that Nederlander and Toboroff didn't know about.

Two things happened that alarmed Nederlander and Toboroff. After the group signaled a possible takeover, the Pennwalt management threatened to sue the would-be raiders. Epstein was reluctant initially to give a deposition about his share of the money, telling Toboroff there were "reasons" he didn't want to. Then, after the opportunity for new investors was closed, co-investors recall Epstein announcing that he'd found one at last: Dick Snyder, then C.E.O. of the publisher Simon & Schuster, who wanted to put up approximately $500,000. (Neither Epstein nor Snyder can now recall the investment. Yet in the 1989 deposition Epstein said that he had recruited Snyder, whom he had met socially, into the deal.)

According to a source, Toboroff and Nederlander told Epstein that Snyder was too late, but, without their realizing it, Hoffenberg has claimed, Snyder wrote a check to Hoffenberg and bought out some of his investment. But then Snyder wanted out.

"Nederlander started to get these irate calls from [Snyder,] who wasn't part of the deal, saying he was owed all this money," says someone close to the deal. Toboroff and Nederlander were baffled.

Eventually, a source close to Hoffenberg says, Hoffenberg paid Snyder off.

Just as Nederlander and Toboroff were growing wary of Epstein, he became increasingly involved with Leslie Wexner, whom he had met through insurance executive Robert Meister and his late wife. Epstein has told people that he met Wexner in 1986 in Palm Beach, and that he won his confidence by persuading him not to invest in the stock market, just as the 1987 crash was approaching. His story has subsequently changed. When asked if Wexner knew about his connection to Hoffenberg, Epstein said that he began working for Wexner in 1989, and that "it was certainly not the same time."

Wherever and whenever it was that Epstein and Wexner actually met, there was an immediate and strong personal chemistry. Wexner says he thinks Epstein is "very smart with a combination of excellent judgment and unusually high standards. Also, he is always a most loyal friend."

Sources say Epstein proved that he could be useful to Wexner as well, with "fresh" ideas about investments. "Wexner had a couple of bad investments, and Jeffrey cleaned those up right away," says a former associate of Epstein's.

Before he signed on with Wexner, Epstein had several meetings with Harold Levin, then head of Wexner Investments, in which he enunciated ideas about currencies that Levin found incomprehensible. "In fact," says someone who used to work very closely with Wexner, "almost everyone at the Limited wondered who Epstein was; he literally came out of nowhere."

"Everyone was mystified as to what his appeal was," says Robert Morosky, a former vice-chairman of the Limited.

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Much of Epstein’s work is related to cleaning up, tightening budgets, and efficiencies. One person who worked for Wexner and who saw a contract drawn up between the two men says Epstein is involved in “everything, not just a little here, a little there. Everything!” In addition, he says, “Wexner likes having a hatchet man…. Whenever there is dirty work to be done he’d stick Jeffrey on it…. He has a reputation for being ruthless but he gets the job done.”

Epstein has evidently been asked to fire personal-staff members when needed. “He was that mysterious person that everyone was scared to death of,” says a former employee.

Meanwhile, he is also less than popular with some people outside Wexner’s company with whom he now deals. “He ‘inserted’ himself into the construction process of Leslie Wexner’s yacht…. That resulted in litigation down the road between Mr. Wexner and the shipyard that eventually built the vessel,” says Lars Forsberg, a lawyer whose firm at the time, Dickerson and Reily, was hired to deal with litigation stemming from the construction of Wexner’s *Limitless*—at 315 feet, one of the largest private yachts in the world. Evidently, Epstein stalled on paying Dickerson and Reily for its work. “It’s probably once or twice in my legal career that I’ve had to sue a client for payment of services that he’d requested and we’d performed … without issue on the performance,” says Forsberg. In the end the matter was settled, but Epstein claims he now has no recollection of it.

The incident is one of a number of disputes Epstein has become embroiled in. Some are for sums so tiny as to be baffling; for instance, Epstein sued investment adviser Herbert Glass, who sold him the Palm Beach house in 1990, for $13,444—Epstein claimed this was owed him for furnishings removed by Glass.

In 1998 the U.S. Attorney’s Office sued Epstein for illegally subletting the former home of the deputy consul general of Iran to attorney Ivan Fisher and others. Epstein paid $15,000 a month in rent to the State Department, but he charged Fisher and his colleagues $20,000. Though the exact terms of the agreement are sealed, the court ruled against Epstein.

Wexner offers some insight into his friend’s combative style. “Many times people confuse winning and losing,” Wexner says. “Jeffrey has the unusual quality of knowing when he is winning. Whether in conversations or negotiations, he always stands back and lets the other person determine the style and manner of the conversation or negotiation. And then he responds in their style. Jeffrey sees it in chivalrous terms. He does not pick a fight, but if there is a fight, he will let you choose your weapon.”

One case is rather more serious. Currently, Citibank is suing Epstein for defaulting on loans from its private-banking arm for $20 million. Epstein claims that Citibank “fraudulently induced” him into borrowing the money for investments. Citibank disputes this charge.

The legal papers for another case offer a rare window into Epstein’s finances. In 1995, Epstein stopped paying rent to his landlord, the nonprofit Municipal Arts Society, for his office in the Villard House. He claimed that they were breaking the terms of the lease by not letting his staff in at night. The case was eventually settled. However, one of the papers filed in this dispute is Epstein’s financial statement for 1988, in which he claimed to be worth $20 million. He listed that he owned $7 million in securities, $1 million in cash, zero in residential property (although he told sources that he had already bought the home in Palm Beach), and $11 million in other assets, including his investment in Riddell. A co-investor in Riddell says: "The company had been bought with a huge amount of debt, and it wasn't public, so it was meaningless to attach a figure like that to it … the price it cost was about $1.2 million." The co-investors bought out Epstein's share in Riddell in 1995 for approximately $3 million. At that time, when Epstein was asked, as a routine matter, to sign a paper guaranteeing he had access to a few million dollars in case of any subsequent disputes over the sale price, Wexner signed for him. Epstein has explained that this was because the co-investors wanted an indemnity against being sued by Wexner. One of the investors calls this "bullshit."

Epstein's appointment to the board of New York's Rockefeller University in 2000 brought him into greater social prominence. Boasting such social names as Nancy Kissinger, Brooke Astor, and Robert Bass, the board also includes such pre-eminent scientists as Nobel laureate Joseph Goldstein. "Epstein was thrilled to be elected," says someone who knows him.

After one term Epstein resigned. According to *New York* magazine, this was because he didn't like to wear a suit to meetings. A spokesperson for the Rockefeller board says Epstein left because he had insufficient time to commit; a board member recalls that he was "arrogant" and "not a good fit." The spokesperson admits that it is "infrequent" for board members not to be renominated after only one term.

Still, the recent spate of publicity Epstein has inspired does not seem to have fazed him. In November he was spotted in the front row of the Victoria's Secret fashion show at New York's Lexington Avenue Armory; around the same time the usual coterie of friends and beautiful women were whisked off to Little St. James (which he tells people has been renamed Little St. Jeff) for a long weekend.

Thanks to Epstein's introductions, says Martin Nowak, the biologist finds himself moving from Princeton to Harvard, where he is assuming the joint position of professor of mathematics and professor of biology. Epstein has pledged at least $25 million to Harvard to create the Epstein Program for Mathematical Biology and Evolutionary Dynamics, and Epstein will have an office at the university. The program will be dedicated to searching for nature's algorithms, a pursuit that is a specialty of Nowak's. For Epstein this must be the summit of everything he has worked toward: he has been seen proudly displaying Harvard president Larry Summers's letter of commitment as if he can't quite believe it is real. He says he was reluctant to have his name attached to the program, but Summers persuaded him. He rang his mentor Wexner about it, and Wexner told him it was all right.

An insatiable, restless soul, always on the move, Epstein builds a tremendous amount of downtime into his hectic work schedule. Yet there is something almost programmed about his relaxation: it's as if even pleasure has to be measured in terms of self-improvement. Nowak says that, when he goes to stay with Epstein in the Caribbean, they'll get up at six and, as the sun rises, have three-hour conversations about theoretical physics. "Then he'll go off and do some work, re-appear, and we'll talk some more."

http://www.vanityfair.com/news/2003/03/jeffrey-epstein-200303

Another person who went to the island with Epstein, Maxwell, and several beautiful women remembers that the women “sat around one night teasing him about the kinds of grasping women who might want to date him. He was amused by the idea…. He’s like a king in his own world.”

Many people comment there is something innocent, almost childlike about Jeffrey Epstein. They see this as refreshing, given the sophistication of his surroundings. Alan Dershowitz says that, as he was getting to know Epstein, his wife asked him if he would still be close to him if Epstein suddenly filed for bankruptcy. Dershowitz says he replied, “Absolutely. I would be as interested in him as a friend if we had hamburgers on the boardwalk in Coney Island and talked about his ideas.”

EXHIBIT 9

Alan Dershowitz says he's still advising Jeffrey Epstein

Alan Dershowitz still provides legal advice to serial pedophile Jeffrey Epstein, he confirmed to Axios.

What he's saying: "He has called me a couple of times about legal issues, because I'm still technically his lawyer," Dershowitz told me in a phone interview on Saturday. "But I haven't had any social, or any other kind of contact. ... You never stop being a person's lawyer."

Background: Dershowitz helped Epstein get a sweetheart plea deal from then-U.S. Attorney Alexander Acosta (now Donald Trump's labor secretary and a rumored long-shot contender for attorney general).

- A bombshell Miami Herald investigative series last week highlighted for the first time the extent of Epstein's alleged crimes and the soft treatment he received from federal prosecutors.
- The Palm Beach multimillionaire would "serve just 13 months in the county jail, but the deal — called a non-prosecution agreement — essentially shut down an ongoing FBI probe into whether there were more victims and other powerful people who took part in Epstein's sex crimes," according to a Miami Herald examination of thousands of emails, court documents and FBI records.

Dozens of women alleged that Epstein molested and raped them when they were underaged using a sophisticated human trafficking network. A civil trial is scheduled to begin on Tuesday in Palm Beach County that may finally let these women tell their stories in court.

Behind the scenes: While he was allegedly raping teenage girls, Epstein cultivated cozy relationships with America's elites.

- Bill Clinton flew on Epstein's plane, nicknamed the "Lolita Express," numerous times, according to flight logs.
- And Donald Trump, in a profile with *New York* magazine written several years before the police caught up with Epstein, praised his friend as a "terrific guy." "It is even said that he likes beautiful women as much as I do," Trump said of Epstein, "and many of them are on the younger side."
- Dershowitz was also friendly with Epstein before the broader public knew he was a pedophile.

Dershowitz confirmed to me that he received a massage at Epstein's Palm Beach home, adding that the woman who provided it was of legal age.

- "What happened was I, um, he lent us, this was well before any of this thing came out, he lent us his house once. And I was there, my grandchildren were there, my daughter was there, and we all got massages."
- "And, um, it was therapeutic. I had a therapeutic massage with an old old Russian, but I never never ... and that was part of when we had his house for about a week during I think it was Christmas vacation."
- "Believe me, if I had known that anything improper had ever taken place in that house, I never would have allowed my children, my grandchildren, my wife, my daughter-in-law, my son, to have spent time there. I can tell you categorically there were no inappropriate pictures, no inappropriate anythings. It was like any other house."

One of Epstein's accusers, Virginia Roberts, has claimed Dershowitz had sex with her when she was underage. Dershowitz has denied the allegation and told the Miami Herald "the story was 100 percent flatly categorically made-up" so "she could get money."

Go deeper: Trump defender Dershowitz shunned by Martha's Vineyard

SEXUAL ASSAULT

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EXHIBIT 10

LETTER

Jeffrey Epstein's Attorneys: A Fair Plea Deal

The attorneys for a man accused of sexual abuse of young women defend the prosecutors' decision to drop federal charges against him.

March 4, 2019

To the Editor:

Re "The Cowardly Labor Secretary" (editorial, March 3):

Your editorial's conclusions are in profound conflict with the reality as we, Jeffrey Epstein's current and former lawyers, knew it.

When he was United States attorney for the Southern District of Florida in 2007, Alexander Acosta, the current labor secretary, oversaw a plea deal for Mr. Epstein involving charges of solicitation of prostitution involving young women. Your underlying premise is that Mr. Acosta had capitulated and not filed federal charges because Mr. Epstein had a "high-priced defense team."

This was categorically denied by the Southern District's then first assistant, Jeffrey H. Sloman, in an Op-Ed article in The Miami Herald on Feb. 15. Mr. Sloman correctly represented the existence of "significant legal impediments to [federally] prosecuting" what was a quintessentially state case.

He also correctly represented that the government had achieved its principal objectives — a felony plea, incarceration, millions of dollars in restitution and monetary settlements, and lifetime sex offender registration — through its agreement with Mr. Epstein. That agreement was reviewed at multiple levels of the Justice Department. An agreement rather than a trial is how over 97 percent of federal cases get resolved, through negotiations by two teams of experienced professionals. The case lacked the credible and compelling proof that is required by federal criminal statutes.

That the guilty plea was required in a state, not federal, court reflected the absence of evidence that Mr. Epstein used the internet, traveled to a location away from his home for the purpose of having illegal sex, commercially trafficked women to others, engaged in force, fraud or coercion, used drugs or alcohol to entice young women who came to his house to exchange sexual massages for money, possessed child pornography or in other ways violated federal law.

The number of young women involved in the investigation has been vastly exaggerated, there was no “international sex-trafficking operation” and there was never evidence that Mr. Epstein “hosted sex parties” at his home.

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Finally, Mr. Epstein has gone to prison and made enormous monetary settlements relying on his negotiated agreement. He is entitled to finality like every other defendant.

Kenneth W. Starr
Martin G. Weinberg
Jack Goldberger
Lilly Ann Sanchez

A version of this article appears in print on March 5, 2019, on Page A26 of the New York edition with the headline: Jeffrey Epstein’s Attorneys: A Fair Plea Deal

EXHIBIT 11

Prof. Dershowitz, Tell Me How You Really Feel

Harvard's legendary law professor chats with the Careerist about the recent sex allegations, his enemies and the "cesspool."

By **Vivia Chen** | January 15, 2015 at 06:19 PM | Originally published on **The American Lawyer**

(Alan Dershowitz)

Alan Dershowitz, arguably the most famous—and maybe infamous—law professor in the land, wants to set the record straight. When he heard that I was writing about his relationship with billionaire Jeffrey Epstein and the related allegation that Dershowitz engaged in sex with a minor, he tracked me down to tell his side of the story.

The backdrop: Dershowitz was part of a legal team that had negotiated a plea deal in 2008 in which Epstein pleaded guilty to felony charges in Florida for soliciting prostitution from a minor. Epstein served 13 months in prison but was spared federal charges under the deal. Last December, lawyers **Bradley Edwards** and **Paul Cassell**filed suit against the U.S. government, arguing that the plea deal violated the rights of Epstein's alleged sex victims; the suit also alleges that Dershowitz had sex with one of the victims when she was under age. Dershowitz has denied all the allegations, and Edwards and Cassell have **filed a defamation suit against Dershowitz** for calling them liars.

The following are excerpts from my two phone conversations with Dershowitz:

From what I've read, your relationship with Epstein seemed chummy. You socialized with him and you and your family stayed at his various homes. Isn't it a bad idea for a lawyer to be so close to a notorious client?

Let me tell you how I met him. I was introduced to him by Lady de Rothschild as an academic colleague. He was friendly with Larry Summers . . . He was in the process of contributing $50 million to Harvard for evolutionary biology.

So Epstein was friendly with all sorts of Harvard muckety-mucks.

The fact that he was giving money didn't hurt. We went to events that he was involved in but none of us suspected that he had another side until later. Jeffrey loved academics. My conversations with him were only about academic subjects. We never discussed females or our social life.

Did your relationship change with Epstein when you took him on as a client?

Virtually all my social contact with him was of an academic nature, and it was prior to the time he was indicted. My relationship with him was entirely professional. It is a total bum rap to say that I "cavorted" with him or was "chummy" with him. I teach my students never, never get too close to clients—and certainly don't do anything improper with them.

The suit says that Jane Doe No. 3 was forced to have sex with you, Prince Andrew and "many other powerful men," including unnamed politicians, foreign presidents and world leaders. Why were you and the Prince singled out by name?

They want to void the plea agreement and needed to find a lawyer who knew Epstein before [the indictment], and had been on his island, his home in New Mexico, Palm Beach. I fit the bill. It was lawyer profiling.

And the Prince?

They claimed that Prince Andrew was using his influence to get Epstein a better deal with the government. What's more laughable than suggesting that the U.S. Attorney would listen to the Prince to go easy on Epstein!

Why bother responding if you think the allegations are so outrageous? Why not just let the facts come out during the legal process?

I have to respond to everything. That's the way I am. Imagine having an unblemished personal life then reading graffiti scrawled on the bathroom door that gets picked up in every paper based on the assertions of a woman who's a serial liar.

Brad Edwards, one of the lawyers bringing this suit, has a history of legal entanglement with Epstein, as does his former partner Scott Rothstein, who's now in prison for his role in a Ponzi scheme. But the other lawyer in this case, Paul Cassell, is a former federal judge and a law professor. Why is he getting involved?

Everyone is shocked that he would be part of this. I think he's always hated me because I'm his opposite. I'm the conventional liberal he hates: I'm against the death penalty, I'm pro abortion rights, pro gun control.

Seems risky to bring a lawsuit for just ideological differences.

No one can understand Cassell's motive. Either he will be disbarred or I will be. And if I knowingly had sex with a sex slave then I would deserve disbarment.

What about the reaction? Do you feel you've been treated fairly by the press and the public?

I've been treated particularly harshly by lawyers and law professors. They are so quick to say that I might be guilty. They're getting too much pleasure out of this. There's a dose of schadenfreude.

Why do you think people like getting you upset?

I'm controversial and more famous than they are. There's a lot of jealousy.

I gather you're talking about legal academia.

Yes, it's a cesspool of jealousy. People in it lack courage.

But you're no stranger to harsh criticism. People weren't exactly nominating you for a justice award for getting O.J. Simpson and Claus von Bulow off the hook.

Some of the criticisms against me have been just. I'm a tough lawyer. But charging me with one of the most heinous crimes is on a different level. I've never been attacked like this. I don't know any lawyer or professor who's had these accusations waged against them. It's worse than what Clarence Darrow had to face.

You retired from Harvard Law School a year ago. Did you expect so much excitement at this stage of your career?

This is an absolute shock. I'm living my little life here [in Florida, New York and Martha's Vineyard]. I lead a boring life. I've been married to the same woman for 28 years. She goes with me everywhere. People know that I won't argue a case or give a speech unless my wife travels with me. This is not the profile of someone who screws around.

You take all this very, very personally, don't you?

Wouldn't you? I've got two grandchildren in college and they are reading this about me. This is the fight of my life.

Note: We have been in contact with Edwards and Cassell and hope to get their sides of the story soon.

EXHIBIT 12

United States District Court
Southern District of New York

VIRGINIA L. GIUFFRE,

Plaintiff,

Case No.: ____________

v.

ALAN DERSHOWITZ,

Defendant.

________________________/

AFFIDAVIT

I, Maria Farmer, swear and affirm as follows:

1. I am currently over the age of 18 and presently reside in Kentucky.

2. In approximately 1995, I was an artist and a graduate student and I met Jeffrey Epstein and Ghislaine Maxwell at an art show where I was displaying some of my art. Epstein said that if I sold him one of my paintings for half price he would help me with my career. I sold him the painting that night for half price which was approximately $6000.00. In 1996, Jeffrey Epstein called me and told me he was looking for someone to help him with acquiring art. I took the job with Epstein but ultimately my job responsibilities were not simply to purchase art but included manning the front door at his New York mansion and keeping records of people who came to the home.

3. During the time I was supervising the door at Epstein's mansion, I witnessed a number of school age girls coming to the home, some of the young girls would be wearing their school uniforms. The girls would come into the NY mansion and then would be escorted upstairs. When I asked Maxwell why these young girls were coming over to the house so often she said that the girls were interviewing for modeling positions. At the time, based on my observations at the home, it did not seem credible to me that these young girls were interviewing for modeling positions.

4. Alan Dershowitz was an individual who came to visit Epstein at his New York mansion a number of times when I was working for Epstein. Dershowitz was very comfortable at the home and would come in and walk upstairs. On a number occasions I witnessed Dershowitz at the NY mansion going upstairs at the same time there were young girls under the age of 18 who were present upstairs in the house.

5. During the time that I worked for Epstein, he arranged for me to work on a special art project at the Ohio mansion of Leslie Wexner. This was in approximately the summer of 1996. I went to Ohio and stayed at the property to work on the art projects. I was also babysitting my two younger brother's and they were staying with me at Wexner's mansion.

6. In addition to my two younger brothers, I also had a younger sister who was fifteen (15) years old. Maxwell and Epstein took an interest in my younger sister. Epstein took us to a movie in New York and during the movie he held my younger sister's hand and was rubbing her in a sexual manner without my knowledge. He then contacted my mother and said he wanted to help put my younger sister through a special school program in Thailand. During the summer of 1996, Epstein and Maxwell flew my younger sister to their ranch in New Mexico. She was only fifteen (15) at the time and they directed her take off all of her clothes and get on a massage table. Maxwell and Epstein then touched her inappropriately on the massage table. It was not until later in the summer when I called my sister in Thailand where she was studying that I learned what had happened to her at Epstein's New Mexico ranch.

7. During that same summer of 1996 when I was working on my art project at Wexner's mansion, Ghislaine Maxwell and Jeffrey Epstein came to Wexner's mansion. They asked me to come into a bedroom with them and then proceeded to sexually assault me against my will. I fled from the room and called the sheriff's office but did not get any response. The Wexner's security staff refused to let me leave the property. I pleaded with them and my father drover up from Kentucky to Ohio to help me. I was held against my will for approximately twelve (12) hours until I was ultimately allowed to leave with my father. Upon my return to New York, I went to the New York Sixth Precinct police department for help and they counseled me to contact the FBI to make a report about the assault in Ohio. I called the FBI and made the report but to my knowledge, the FBI did not take any action against Epstein or Maxwell. To my knowledge I was the first person to report Maxwell and Epstein to the FBI. It took a significant amount of bravery for me to make that call because I knew how incredibly powerful and influential both Epstein and Maxwell were particularly in the art community.

8. After the sexual assault, Maxwell and Epstein called me multiple times threatening me. Maxwell and Epstein contacted my art clients and individuals in the art community in an effort to ruin my art career. Maxwell and Epstein were successful and I was shut out of all art related opportunities. Maxwell and Epstein worked in concert to make sure that my career and my life was ruined. I was terrified of Maxwell and Epstein and I moved a number of times to try to hide from them.

9. I have struggled throughout my life as a direct result of Epstein and Maxwell's actions against me and my hope is that they will be held accountable for their crimes. While I am still afraid, I am coming forward because I think it is so important to do so.

Dated: 4/12/19

Maria Farmer

Maria Farmer

STATE OF FLORIDA)
)
COUNTY OF BROWARD)

On the 12th day of April in the year of 2019, before me, Deborah C. Knowlton the undersigned authority, appeared to me by video conference Maria Farmer, who is personally known to me or proved to me on the basis of satisfactory evidence to be the individual whose name is subscribed to the within instrument and acknowledged to me that she executed the same in her individual capacity, and that by her signature in the instrument, the individual or the person upon behalf of which the individual acted, executed the instrument.

Witness my hand and official seal

Deborah C.

Notary Public

Notary Public State of Florida
Deborah C Knowlton
My Commission GG 133867
Expires 11/29/2021

EXHIBIT 13

United States District Court
Southern District of New York

VIRGINIA L. GIUFFRE,

Plaintiff, Case No.: ____________

v.

ALAN DERSHOWITZ,

Defendant.
_______________________/

AFFIDAVIT OF DAVID S. STONE

1. I am a member of the Bars of New Jersey and New York and am the Senior Managing Partner of the Stone & Magnanini Law Firm.

2. I am acquainted with Alan Dershowitz having worked with him professionally on the Claus Von Bulow matter and we have remained friendly ever since. Approximately from November 2002 to March 2009, I was a Partner at Boies Schiller Flexner LLP's New Jersey office.

3. I make this affidavit to set forth what my testimony would be if called to testify concerning my knowledge of the events described herein.

4. In or about May 2015, I received a call from Mr. Dershowitz who told me that a client of Mr. Boies' law firm was accusing Mr. Dershowitz of having had sexual relations with her when she was under the age of consent. Mr. Dershowitz said he had been trying to contact Mr. Boies with no success and he knew that Mr. Boies and I had worked together. Mr. Dershowitz told me that the accusations were absolutely false and asked me if I would contact Mr. Boies and arrange for them to meet so that he could attempt to convince Mr. Boies that the accusations were false. I agreed to do so, and in that connection attended at least three meetings that included both Mr. Boies and Mr. Dershowitz and spoke to Mr. Dershowitz separately. I believe Ms. McCawley attended at least two of the meetings.

5. I am informed that Mr. Dershowitz has asserted that at a meeting on May 19th, at which I was present Mr. Boies stated "Roberts was mistaken in naming me as someone with whom she had sex" and "that if he failed to persuade her of that fact, he would leave her representation to Edwards and Cassell and no longer represent her." Mr. Boies did not say that on May 19th or at any other time when I was present.

6. In fact, the purpose of the May 19th meeting with Mr. Boies was for Mr. Dershowitz to propose a method to persuade Mr. Boies that his client was mistaken about having sex with Mr. Dershowitz. Mr. Dershowitz proposed to show using his own records of travel and calendars that he could not have been present at the times alleged as he was demonstratively elsewhere. However, Mr. Dershowitz did not have the records with him at that meeting and a later meeting was scheduled for Mr. Dershowitz and his paralegal to present the records. Neither at or prior to the May 19th meeting, had Mr. Dershowitz given anything for Mr. Boies to evaluate the issue further.

7. I am informed that Mr. Dershowitz has also asserted that at a meeting on June 1, 2015, "Boies said his goal was to persuade Virginia Roberts that she was mistaken in identifying me as a person with whom she had sex." Mr. Boies never said that in my presence, and what he did say in my presence both before and after June 1, 2015 was inconsistent with what Mr. Dershowitz ascribes to Mr. Boies. Mr. Boies said he would discuss Mr. Dershowitz presentation with his client and see if it changed the client's mind regarding her recollections but he also said that the client strongly believed what she was saying.

8. At Mr. Dershowitz's request I attended a meeting on July 6, 2015, at the Boies Schiller Flexner offices in New York City with David Boies and Sigrid McCawley with Mr. Dershowitz participating by Skype. The purpose of the meeting as stated at the meeting, and as stated to me by Mr. Dershowitz prior to the meeting, was to continue his efforts to persuade Mr. Boies and Ms. McCawley that Mr. Dershowitz had not been in any of the places where the client said Mr. Dershowitz had sex with her at any relevant time. The assertion by Mr. Dershowitz that Mr. Boies had, by this time, stated that he was convinced that Mr. Dershowitz had not had sex with the client or had expressed this view in my presence, is not accurate.

   (a) Mr. Boies indicated at the July 6th meeting that while the information was "useful" he had open questions about what he was given, and that there were gaps in what he was being given. Moreover, there were locations where Mr. Dershowitz was alleged to have had sex with the client with respect to which Mr. Dershowitz had not yet produced sufficient documentation.

   (b) The meeting ended with Mr. Dershowitz promising to produce additional materials to BSF and with the parties planning to have another meeting to review those materials.

9. Throughout this process, Mr. Dershowitz appeared determined that the outcome of those meetings would vindicate him. At various points, Mr. Boies did say that if he became convinced that his client was honestly mistaken about Mr. Dershowitz that he would convey that view to his client and that if he could not convince her, his firm would consider withdrawing from her representation. However, Mr. Boies also said that while he had an open mind on this matter, in light of the steps his firm had taken to verify the client's accounts, and the other evidence of which he was aware, Mr. Dershowitz would have to produce compelling proof to convince him the client was mistaken. Following

the July 6, 2015 meeting, Mr. Dershowitz expressed to me that he believed he was making progress in convincing Mr. Boies that the client was mistaken in identifying Mr. Dershowitz as someone with whom she had sex. I told Mr. Dershowitz that I thought he was overly optimistic and reading things into what Mr. Boies was saying and hearing what he wanted to hear. I truly believe this was the case, i.e., that Mr. Boies was making careful and guarded statements consistent with statements lawyers often make in settlement discussions and that Mr. Dershowitz, who urgently wanted the case to go away, was reading things into those statements that weren't there.

10. My recollection is that, at all times, Mr. Boies remained adamant that the client's assertions about Mr. Dershowitz represented her best, honest recollection. For example, at one point, Mr. Dershowitz told Mr. Boies that Ms. Roberts could well believe that she had sex with Mr. Dershowitz because she might be confusing Mr. Dershowitz with Nathan Myhrvold who spent a lot of time with Mr. Epstein and who looked a lot like Mr. Dershowitz. Mr. Dershowitz urged Mr. Boies to convince his client that she was mistaken and that she had actually had sex with Mr. Myhrvold. Mr. Boies told Mr. Dershowitz that he obviously did not have personal knowledge as to what had or had not happened, but that he had taken steps to verify that Ms. Roberts was telling the truth as she believed it. Shortly thereafter, I came to understand that Ms. Roberts had taken, and passed, a lie detector test.

11. At no time in my presence, whether in the presence of Mr. Dershowitz or outside of it, did Mr. Boies ever say that he believed or was convinced that Ms. Roberts was mistaken or that Mr. Dershowitz did not have sex with Ms. Roberts. Ms. McCawley said very little at the meetings. Furthermore, I do not recall Ms. McCawley ever expressing any doubt that Mr. Dershowitz had sex with Ms. Roberts and I am confident that I would recall such a statement if it was made, given the circumstances. In addition, Mr. Dershowitz never suggested to me that Ms. McCawley doubted that Ms. Robert's allegations were false.

David S. Stone

4/5/2019

Date

KAITLIN MAY LUZZI
ID # 2448450
NOTARY PUBLIC
STATE OF NEW JERSEY
My Commission Expires July 31, 2019

EXHIBIT 14

United States District Court
Southern District of New York

VIRGINIA L. GIUFFRE,

Plaintiff, Case No.: ____________

v.

ALAN DERSHOWITZ,

Defendant.
________________________/

AFFIDAVIT

I, Sarah Ransome, swear and affirm as follows:

1. I am currently over the age of 18 and presently reside in the country of Spain.

2. In the summer of 2006, when I was twenty-two years old and living in New York, I was introduced to Jeffrey Epstein by a girl I had met named Natalya Malyshov. Shortly after meeting Jeffrey he invited me to fly to his private island in the US Virgin Islands, which I did. After that first trip I traveled to the island several more times, usually on one of Jeffrey's private airplanes, and always at his direction. I am told that my name appears on the flight logs of one or more of those trips. On a few occasions, Jeffrey also arranged to have me flown to the island on commercial flights. As it turned out, the primary purpose of those visits was to have me have sexual relations with Jeffrey, Nadia Macinkova, and various other girls and guests he brought to the island.

3. During one of my visits to the island I met Ghislaine Maxwell. Watching her interact with the other girls on the island, it became clear to me that she recruited all or many of them to the island. Once they were there, she appeared to be in charge of their activities, including what they did, who they did it with, and how they were supposed to stay in line. She assumed the same supervisory role with me as soon as I arrived. Some of the girls appeared to be 18 or older, but many appeared to be young teenagers. I recall seeing a particularly young, thin girl who looked well under 18 and recall asking her age. I later learned was a ballerina. She refused to tell me or let me see her passport.

4. In addition to spending time with Jeffrey on his island, I spent time with him in New York City. At his town house I was also lent out by him to his friends and associates to have sex. Among the people he lent me to was his friend, Alan Dershowitz. On one occasion I was in a bedroom at Jeffrey's New York townhouse

with Jeffrey and Nadia Marcinkova. After a short time, Alan Dershowitz entered the room, after which Jeffrey left the room and Nadia and I had sex with Dershowitz. I recall specific, key details of his person and the sex acts and can describe them in the event it becomes necessary to do so.

I affirm under penalty of perjury that the foregoing is true and correct.

Dated: 8-04-2019

Sarah Ransome

STATE OF FLORIDA)
)
COUNTY OF BROWARD)

On the 8th day of April in the year of 2019, before me, Deborah C. Knowlton, the undersigned authority, appeared to me by video conference SARAH RANSOME, who is personally known to me or proved to me on the basis of satisfactory evidence to be the individual whose name is subscribed to the within instrument and acknowledged to me that she executed the same in her individual capacity, and that by her signature in the instrument, the individual or the person upon behalf of which the individual acted, executed the instrument.

Witness my hand and official seal

Notary Public

Deborah C Knowlton
My Commission GG 133867
Expires 11/29/2021

EXHIBIT 15

Christopher Arborn

From: Alan Dershowitz <dersh@law.harvard.edu>
Date: December 9, 2015 at 2:50:58 PM EST
To: David Boies <DBoies@BSFLLP.com>
Cc: David Boies2 <xboies@gmail.com>
Subject: Re: Possible Statement

We should be aiming at a short simple statement such as:
"The events at issue occurred approximately 15 years ago when I was a teenager. Although I believed then and continued to believe that AD was the person with whom I had sex, recent developments raise the possibility that this may be a case of mistaken identification. "
Alternative:
"that it may have been someone else".
"That someone mistakenly told me it was him."
We should be able to come up with a mutually acceptable statement. It would be acceptable if the statement came from you rather than her, if she prefers.
Sent from my iPhone

On Dec 9, 2015, at 10:21 AM, Alan Dershowitz <dersh@law.harvard.edu> wrote:

David
Have we given up on a mutually acceptable statement from VR or you. Let's keep trying. We are not THAT far apart.
Alan.

Sent from my iPhone

Christopher J Arborn
Personal Assistant to David Boies
BOIES SCHILLER FLEXNER LLP
333 Main Street
Armonk, NY 10504
(t) (914) 749-8301
(m) (914) 843-0989
carborn@bsfllp.com
www.bsfllp.com

EXHIBIT 16

Miami Herald

An Epstein sex case is settled; Dershowitz denies latest allegation

BY JULIE K. BROWN

DECEMBER 19, 2018 8:30 PM, UPDATED DECEMBER 27, 2018 7:55 AM

Accused sex traffickers Jeffrey Epstein and Ghislaine Maxwell have settled a federal civil lawsuit filed by a woman who says she was ordered under threat of violence to have sex with them and other influential individuals when she was in her early 20s, sources confirmed Wednesday.

Sarah Ransome, who now lives in Barcelona, claimed that she was recruited and trafficked for sex by the pair in 2006 and 2007 — at the same time that Epstein, a wealthy New York hedge fund manager, was under federal investigation for molesting dozens of underage girls at his Palm Beach mansion.

Women who say they were victims of sexual abuse at the hands of Palm Beach multimillionaire Jeffrey Epstein want a judge to throw out his lenient plea deal. AP

According to a recent court transcript, among those people Ransome claims she was directed to have sex with was Epstein's lawyer, Alan Dershowitz, who helped negotiate a controversial plea deal that gave the eccentric multimillionaire — and co-conspirators employed by Epstein — federal immunity in 2008.

Dershowitz, 80, told the Miami Herald that he has never met Ransome nor has he ever had sex with her. He accused Ransome's attorney, powerhouse lawyer David Boies, of inventing the story and using her and another woman, Virginia Roberts, to frame him. Roberts asserted in a federal court affidavit in 2015 that Epstein forced her to have sex with Dershowitz when she was 16 years old.

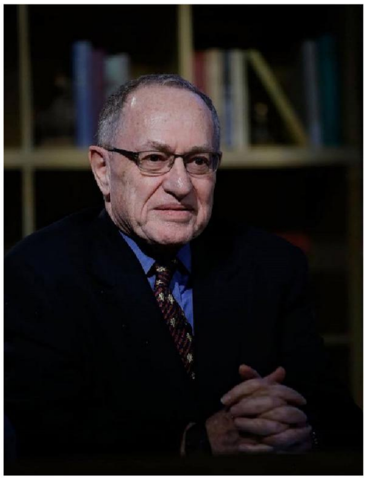
"I am the victim. David Boies and these women are the perpetrators," Dershowitz said. "They have willfully and deliberately concocted stories in order to make money — millions and millions of dollars. And I will not rest until the entire story comes out," said Dershowitz, a professor at Harvard Law School and frequent Fox news guest commentator.

Nowhere in the court case or the transcript does Ransome or anyone else allege that Ransome had sex with Dershowitz — only that she was directed to.

The Ransome settlement, which is confidential, comes two weeks after Epstein settled another lawsuit in Palm Beach, filed by an attorney who represented several women who said they were coerced into sex acts with Epstein when they were underage. As part of the settlement, Epstein, 65, issued an apology to Fort Lauderdale attorney Bradley Edwards, admitting that he leveled false claims in a lawsuit as part of an effort to intimidate Edwards into abandoning his aggressive advocacy for the women, who are now in their late 20s and early 30s.

The developments follow a series of stories published by the Miami Herald in late November that detailed how state and federal prosecutors worked with Epstein's lawyers to conceal the extent of Epstein's crimes, and secretly negotiated an unusual plea agreement that allowed him to escape federal sex trafficking charges that could have sent him to prison for life. The agreement, by design, was kept from his victims so that they could not appear at his sentencing.

Last week, more than two dozen lawmakers in Washington demanded a federal investigation into that plea deal, which was negotiated, signed and sealed by former Miami U.S. Attorney Alexander Acosta, now President Donald Trump's secretary of labor.



Alan Dershowitz says he has never met the woman who alleges in a lawsuit she was ordered to have sex with influential men, including the famous lawyer. John Lamparski GETTY IMAGES/TNS

Acosta has not commented on the Herald story or on the calls for a probe into how he handled the Epstein case.

This week, a decade after defending Epstein, Dershowitz once again found himself in the spotlight amid the new allegations, mentioned briefly in a court filing on Nov. 28, and first reported on Tuesday by the New York Daily News.

During a Nov. 7 hearing, Maxwell's lawyer, Laura Menninger, mentioned Dershowitz's name as among those "third parties" that Ransome claims she was instructed to have sex with, according to a transcript of the hearing obtained by the Herald.

On Tuesday, after the Daily News published its story, Dershowitz lashed out in dozens of posts on Twitter, denouncing Ransome as "delusional" and claiming that her lawyer, Boies, was retaliating against him because Dershowitz had filed a bar complaint against him.

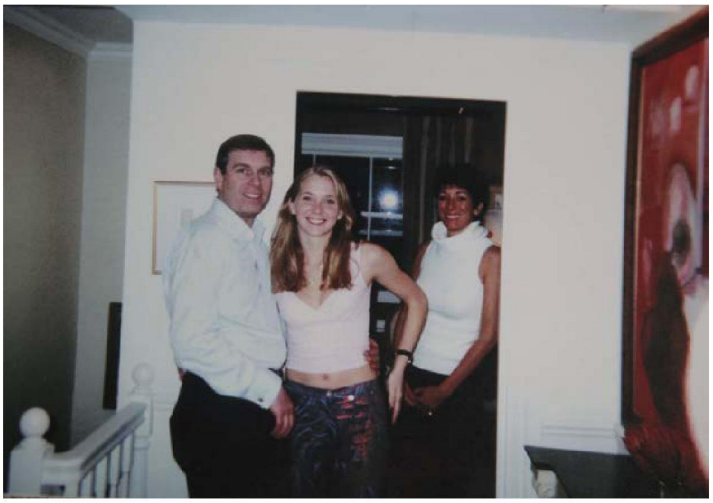
"Attorney David Boies threatened that unless I withdrew a bar complaint I had filed against him for falsely accusing me of sexual misconduct, he would find another woman to accuse me of similar misconduct. He has now found an unbalanced woman who has delusions of having sex tapes of Donald Trump, Hillary Clinton, Bill Clinton and other prominent figures," Dershowitz said in a tweet.

Boies, best known for arguing on behalf of Vice President Al Gore in the 2000 Florida election recount, responded in an interview with the Herald:

"[Dershowitz's] charges are absurd. Either he has become totally unhinged or he thinks that if he says things that are loud enough and crazy enough it will distract attention from what he has done. There is no support — none — for what he says."

Ransome claimed that, in her early 20s, she was recruited to work as a masseuse for Epstein who, in exchange, promised he would help her get into fashion design in New York, according to her civil lawsuit, filed in January 2017. Epstein and Maxwell then kept her passport and threatened to ruin her life and physically harm her if she didn't have sex with them and others in 2006 and 2007, Ransome said in the complaint.

The complaint alleges that this all occurred at the same time as Epstein's lawyers were negotiating with Acosta and other federal prosecutors for a deal to avoid federal sex trafficking charges in connection with a scheme in which he lured underprivileged girls, mostly 13 to 16, to his home in Palm Beach under the pretense that he would pay them $200 to $300 for massages. Instead, police in Palm Beach found that he had been molesting and sexually abusing dozens of girls between 2001 and 2007.



In this photograph, Virginia Roberts socializes with Prince Andrew as Jeffrey Epstein associate Guislaine Maxwell stands in the background. Roberts claims she was effectively used as a sex slave by Epstein. In that capacity she had sex with the prince, Roberts says. The prince denied that. COURTESY OF VIRGINIA ROBERTS

Under the plea deal, known as a non-prosecution agreement, Epstein was allowed to plead guilty in state court to two prostitution charges. He served 13 months in a private wing of the Palm Beach County jail, where he was given liberal work release privileges. The deal also quashed an FBI investigation into whether Epstein was operating an international sex trafficking organization, the Herald found as part of its yearlong investigation.

"Even as [Epstein, Maxwell and other defendants] and their attorneys were busy arguing Epstein's innocence and publicly defaming his victims as liars...defendants merely changed their location" from Palm Beach to "other places in the U.S. [including the Southern District of New York] and abroad and brought them to Epstein's mansion in New York City and his private island in the Virgin Islands," Ransome's complaint alleged.

Dershowitz, in interviews with the Herald, and in recent public statements, said he has never met Ransome. He also said she initially tried to interest the New York Post in her story, but a reporter whom he said he spoke with told him Ransome was not credible. He said he has a trove of emails between Ransome and the reporter that prove she is a "lunatic."

"There are hundreds of emails in which she claimed to have sex with everybody in the world and also claimed she has video of Hillary Clinton, Bill Clinton, Donald Trump and others having sex with underage girls — but she never ever accused me in these emails," Dershowitz said.

The emails are under seal, he said, and therefore cannot be made public. Dershowitz said he has asked the court to unseal them but his efforts thus far have been unsuccessful.

In the recent court transcript, however, it is Maxwell's attorney, Laura Menninger — not Ransome or her attorneys — who named Dershowitz.

"[Ransome] has alleged not only that my client [Maxwell] ran a sex trafficking organization but she claims also that she was directed by my client and the Epstein defendants to have sex with third parties, including Alan Dershowitz, for example," Menninger said. "And so to the extent my client or Mr. Dershowitz or anyone else is going to be asked about their private sexual activity, I believe that would implicate their privacy rights..."

Roberts, who now lives in Australia, said that Epstein ordered her to have sex with Dershowitz six times, according to a 2015 affidavit, which was filed in connection with an unrelated Epstein federal lawsuit.

At that time, Dershowitz launched a media blitz on TV asserting that Roberts made up the story. He also called for Roberts' lawyers — Edwards and University of Utah law professor Paul Cassell — to be disbarred. The lawyers sued Dershowitz for defamation, and the case was settled last year.

Dershowitz publicly declared he was vindicated after a federal judge ordered Roberts' affidavit stricken from the court record. But the judge did not address the veracity of her sexual misconduct claims; he instead ruled that the affidavit was misplaced in a case not involving Dershowitz.

Boies, whose firm represented Roberts pro bono, addressed Dershowitz's longstanding contention that he had been exonerated.

"Anytime in a lawsuit where you were the defendant and you paid the plaintiff $900,000 to settle it — that's a strange kind of vindication," Boies said, asserting that Dershowitz paid that amount as part of the defamation settlement with Edwards and Cassell.

In 2016, Dershowitz released a statement following what he said was "an independent investigation" that had been conducted by former FBI Director Louis Freeh, who is now a private consultant.

"Our investigation found no evidence to support the accusations of sexual misconduct against Professor Dershowitz. In fact, in several instances, the evidence directly contradicted the accusations made against him," Freeh wrote.

Most of the court records in the Roberts case are sealed. In February, the Miami Herald filed a motion in the Southern District of New York, seeking access to documents. The motion, which was not opposed by Roberts, could shed more light on the full scope of Epstein's crimes and who was involved.

The motion was denied. The Herald is appealing.

https://www.miamiherald.com/latest-news/article223315075.html

From: Jeffrey Epstein [jeevacation@gmail.com]
Sent: 9/10/2010 4:01:03 PM
To: Lesley Groff [redacted]
Subject: Re: List of Events from Siegel

I only wanted what peggy was hositng

On Fri, Sep 10, 2010 at 11:54 AM, Lesley Groff <[redacted]> wrote:

From: Margaux Rogers [mailto:[redacted]]
Sent: Friday, September 10, 2010 11:53 AM
To: Lesley Groff
Subject: RE: List for JE only from now till Sept 23!!!!!!

Calendar of Major Events, Openings, and Fundraisers

Saturday, September 11, 2010

Kids Fashion Week

Petite Parade Opening Day. Childrens fashion shows. (Continues through September 13.). Metropolitan Pavilion. New York. Contact: Sale Stojanovic. sale@funkshion.com. (305) 673-2756.

Event address: 125 West 18th St., New York. Event web address:www.kidsfashionweekny.com.

Tags: Children Industry Beauty Industry Fashion Industry Media Industry Retail Fashion Event Fashion Show.

Couture Fashion Week

Couture Show. 8:00 am. Couture fashion show, cocktails, and after party. Benefiting the NYC Affiliate of Susan G. Komen For the Cure. Elegant chic. Honoring Dara Richardson-Heron. Tickets from $75.00. Waldorf=Astoria. New York. Contact: Andres Aquino. newyorkfashionshows@yahoo.com. (917) 749-8421.

Waldorf=Astoria: Grand Ballroom. Event address: 301 Park Avenue, New York. Sponsored by Couture Fashion Week. Fax: (212) 202-4604. Event web address:www.couturefashionweek.com/susankomennyc.htm.

Tags: After party Cocktail party Fashion Show Fundraiser Arts Patron Collector Exclusive Mix Food and Wine Lover Industry Fashion Social Patron Health Cancer Medical Research.

New York City - Office of the Mayor

Official Memorial Ceremony and Remebrance 2010. 8:46 am. Zuccotti Park. New York. (212) 442-8953.

Event address: Liberty Street between Broadway and Church Streets, New York.

Tags: Reception Children Family Industry Diplomatic Industry Government Relations Industry Media Industry Military Industry Political/Government Social Patron Civic.

Norman Ambrose

Fashion Week Presentation. 9:00 am. Spring/summer 2011 collection. Invitation only. The Pierre Hotel. New York. info@normanambrose.com.

Event address: 2 East 61st St., New York. Event web address: normanambrose.com.

Tags: Fashion Event Fashion Show Exclusive Mix Industry Beauty Industry Fashion Industry Media Industry Retail.

Yuna Yang

Fashion Week Presentation. 9:30 am. Spring/summer 2011 collection. Invitation only. Hudson Hotel. New York. press@yunayang.com.

Event address: 356 West 58th St., New York. Event web address: yunayang.com.

Tags: Fashion Event Fashion Show Exclusive Mix Industry Beauty Industry Fashion Industry Media Industry Retail.

Mercedes Benz Fashion Week

Lacoste Show. 10:00 am. Spring 2011 collection. Invitation only. Lincoln Center Plaza. New York.

Event address: West 65th St. and Broadway, New York. Event web address:www.wiseandcomp.com/lacoste.

Tags: Fashion Event Fashion Show Exclusive Mix Industry Beauty Industry Fashion Industry Media Industry Retail.

Showtime Networks

Third Annual Showtime House Opening Day. 10:00 am. (Continues through October 27.) Featuring rooms inspired by Dexter, Nurse Jackie, Weeds, United States of Tara, The Big C, The Borgias, and Californication. Tickets from $15.00. Cassa Hotel and Residences. New York. Contact: Johanna Fuentes. johanna.fuentes@showtime.net. (212) 708-1590.

Event address: 70 West 45th Street, New York. Sponsored by CNET,Lonny Magazine,The New Yorker,Wired Magazine. Event web address: www.sho.com/showtimehouse.

Tags: Designer Showcase Festival Tour Industry Design Industry TV Social Patron.

Mercedes Benz Fashion Week

Cynthia Rowley Show. 11:00 am. Spring 2011 collection. Invitation only. Lincoln Center Plaza. New York. Contact: Michelle Finocchi. finocchi@cynthiarowley.com. (212) 242-0847.

Event address: West 65th St. and Broadway, New York. Event web address:www.cynthiarowley.com.

Tags: Fashion Event Fashion Show Exclusive Mix Industry Beauty Industry Fashion Industry Media Industry Retail.

September Concert Foundation

Various Performances. 11:00 am. Tribute concerts around the city. Various venues. New York.

Event address: , New York. Event web address: www.septemberconcert.org.

Tags: Benefit Performance Concert Children Family Industry Music Social Patron Civic.

United Bamboo

Fashion Week Show. 11:00 am. Spring 2011 collection. Invitation only. Hosfelt Gallery. New York. ub@kruppgroup.com.

Event address: 531 West 36th Street, New York. Event web address: unitedbamboo.com.

Tags: Fashion Event Fashion Show Exclusive Mix Industry Beauty Industry Fashion Industry Media Industry Retail.

Catholic Big Sisters & Big Brothers of New York

Second Annual Family Polo Day. 12:00 pm. Polo match, lunch, cocktails, designer showcase, silent auction and children's activity field. Tickets from $50.00. Haviland Hollow Farm. Patterson. Contact: Anna Bruning. (212) 475-3291.

Event address: 815 East Branch Road, Patterson. Event web address:www.cbsbb.org/events/fundraising-events/family-polo-event.

Tags: Equestrian Fundraiser Luncheon Children Family Lifestage Kids Social Patron Child Advocacy.

Ohne Titel

Fashion Week Show. 12:00 pm. Spring 2011 collection. Invitation only. Exit Art. New York. Contact: Stephen Courter. stephen@ohnetitel.com. (646) 243-1887.

Event address: 475 10th Ave., New York. Event web address: www.ohnetitel.com.

Tags: Fashion Event Fashion Show Exclusive Mix Industry Beauty Industry Fashion Industry Media Industry Retail.

Mercedes Benz Fashion Week

Prabal Gurung Show. 1:00 pm. Spring 2011 collection. Invitation only. Lincoln Center Plaza. New York. Contact: Kristen Roller. kristen@prabalgurung.com.

Event address: West 65th St. and Broadway, New York. Event web address:www.prabalgurung.com.

Tags: Fashion Event Fashion Show Exclusive Mix Industry Beauty Industry Fashion Industry Media Industry Retail.

Juan Carlos Obando

Fashion Week Show. 2:00 pm. Spring/summer 2011 collection. Invitation only. Milk Gallery-Studios. New York. Contact: Dominique Lafaurie. dominique@jcobando.com.

Event address: 450 West 15th St., New York. Event web address: jcobando.com.

Tags: Fashion Event Fashion Show Exclusive Mix Industry Beauty Industry Fashion Industry Media Industry Retail.

Mercedes Benz Fashion Week

Adam Show. 2:00 pm. Spring 2011 collection. Invitation only. Lincoln Center Plaza. New York. Contact: Alex Neff. an@adamlippes.com.

Event address: West 65th St. and Broadway, New York.

Tags: Fashion Event Fashion Show Exclusive Mix Industry Beauty Industry Fashion Industry Media Industry Retail.

Mercedes Benz Fashion Week

Yoana Baraschi Presentation. 2:30 pm. Spring 2011 collection. Invitation only. Lincoln Center Plaza. New York. requests@laforce-stevens.com.

Event address: West 65th St. and Broadway, New York.

Tags: Fashion Event Fashion Show Exclusive Mix Industry Beauty Industry Fashion Industry Media Industry Retail.

Mercedes Benz Fashion Week

Mik Cire By Eric Kim Presentation. 3:00 pm. Spring 2011 men's collection. Invitation only. Lincoln Center Plaza. New York. Contact: Brynne. brynne@maopr.com.

Event address: West 65th St. and Broadway, New York.

Tags: Fashion Event Fashion Show Exclusive Mix Industry Beauty Industry Fashion Industry Media Industry Retail.

Alexander Wang

Fashion Week Show. 5:00 pm. Spring 2011 collection. Invitation only. Pier 94. New York. request@kcdworldwide.com.

Event address: 711 12th Avenue @ 55th St., New York.

Tags: Fashion Event Fashion Show Exclusive Mix Industry Beauty Industry Fashion Industry Media Industry Retail.

Isabella Tonchi

Fashion Week Presentation. 6:00 pm. Spring 2011 collection. Invitation only. Milk Gallery-Studios. New York. itonchi@kaleidescopepr.net.

Event address: 450 West 15th St., New York.

Tags: Fashion Event Fashion Show Exclusive Mix Industry Beauty Industry Fashion Industry Media Industry Retail.

Mercedes Benz Fashion Week

Charlotte Ronson Show. 6:00 pm. Spring 2011 collection. Invitation only. Lincoln Center Plaza. New York. request@seventhhousepr.com.

Event address: West 65th St. and Broadway, New York.

Tags: Fashion Event Fashion Show Exclusive Mix Industry Beauty Industry Fashion Industry Media Industry Retail.

French Institute/Alliance Francaise

Skyroom Project and Sans-titre. 6:30 pm. Dance theater workshop. French Institute Alliance Francaise. New York. jkutsher@fiaf.org. (646) 388-6677.

Event address: 22 E 60 St., New York. Event web address: www.crossingtheline.org.

Tags: Performing Arts Supporter Social Patron Arts Performing Arts.

A Detacher Collection

Fashion Week Show. 7:00 pm. Spring 2011 collection. Invitation only. Pier 59 Studios, Art and Fashion Group. New York. info@adetacher.com.

Event address: Pier 59, at Chelsea Piers, New York. Event web address: adetacher.com.

Tags: Fashion Event Fashion Show Exclusive Mix Industry Beauty Industry Fashion Industry Media Industry Retail.

Cocktails and Couture

Bi-annual Event. 7:00 pm. Discussions, light fare, shopping and product preview. Invitation only. Ted Gibson Salon & Spa. New York.

Event address: 184 5th Avenue, New York. Sponsored by HTC,Ralph Lauren,Stila Cosmetics,Suave,Tarte Cosmetics,Unilever,Visine. Noted attendees: Ted Gibson,Zoe Saldana,Robert Verdi. Event web address: www.cocktailsandcouture.net.

Tags: Industry Fashion Industry Media Cocktail party Fashion Event Fashion Show Artist Industry Beauty.

Mercedes Benz Fashion Week

Z Spoke by Zac Posen Show. 7:00 pm. Spring 2011 collection. Lincoln Center Plaza. New York. info@zacposen.com.

Event address: West 65th St. and Broadway, New York. Event web address:www.zacposen.com.

Tags: Fashion Event Fashion Show Exclusive Mix Industry Beauty Industry Fashion Industry Media Industry Retail.

Robert Geller

Fashion Week Show. 7:00 pm. Spring 2011 collection. Invitation only. Exit Art. New York. rgrsvp@laforce-stevens.com.

Event address: 475 10th Ave., New York.

Tags: Fashion Event Fashion Show Exclusive Mix Industry Beauty Industry Fashion Industry Media Industry Retail.

Suno NY

Fashion Week Presentation. 7:00 pm. Spring/summer 2011 collection. Invitation only. Milk Gallery-Studios. New York. suno@bpcm.com.

Event address: 450 West 15th St., New York.

Tags: Fashion Event Fashion Show Exclusive Mix Industry Beauty Industry Fashion Industry Media Industry Retail.

Altuzarra

Fashion Week Show. 8:00 pm. Spring 2011 collection. Invitation only. Milk Gallery-Studios. New York. coline@altuzarra.com.

Event address: 450 West 15th St., New York. Event web address: altuzarra.com.

Tags: Fashion Event Fashion Show Exclusive Mix Industry Beauty Industry Fashion Industry Media Industry Retail.

Elle Magazine

Opening Day. 8:00 pm. Featuring Kardashians for Beach Bunny Swimwear and Joonbug. com after-party. Griffin. New York.

Event address: 50 Gansevoort Street, New York. Event web address:www.elle.com/Runway/Fashion-Week-Style-360-Schedule3.

Tags: After party Fashion Event Fashion Show Exclusive Mix Industry Beauty Industry Fashion Industry Media Industry Retail.

Manuel de la Cruz

Fashion Week Presentation. 8:00 pm. Spring 2011 collection. Invitation only. Metropolitan Pavilion. New York. Contact: Press: Daniella Asantewaa. mdlc.pr@gmail.com.

Event address: 125 West 18th St., New York.

Tags: Industry Media Industry Retail Fashion Event Fashion Show Exclusive Mix Industry Beauty Industry Fashion.

September Concert Foundation

Second Annual Gala. 8:00 pm. Cocktails, and dinner. Olympic Tower Atrium. New York. Contact: Jeaninne. rsvp@septemberconcert.org. (212) 333-3399.

Event address: 645 Fifth Avenue, New York. Event web address:www.septemberconcert.org/index.php?option=com_content&view=article&id=105% 3Aour-2nd-annual-gala-even.

Tags: Gala Industry Music Social Patron Civic.

Whitney Eve

Fashion Week Presentation. 8:00 pm. Spring 2011 collection. Invitation only. Industria - Studio 6. New York. Contact: Caitlin Kelly. caitline@alisonbrodpr.com.

Event address: 89 Jane Street, New York. Event web address: whitneyeve.com.

Tags: Fashion Event Fashion Show Exclusive Mix Industry Beauty Industry Fashion Industry Media Industry Retail.

John Varvatos

Tenth Anniversary Party. 9:00 pm. Cocktails and entertainment. Invitation only. John Varvatos Boutique. New York.

Event address: 315 Bowery, New York.

Tags: Cocktail party Fashion Event Exclusive Mix Industry Beauty Industry Fashion Industry Media.

Sunday, September 12, 2010

Susan G. Komen for the Cure

20th Annual Komen NYC Race for the Cure. 9:00 am. 5k run/walk. Tickets from $30.00. Central Park. New York. info@komennyc.org. (212) 560-9590.

Event address: , New York. Event web address: www.komennyc.org.

Tags: Walks Social Patron Sports Supporter Sports-Athlete Health Cancer Fundraiser Run.

ASD

2010 New York Expo Opening Day. 9:30 am. Exhibits and shopping. (Continues through September 14.). Jacob K. Javits Convention Center. New York. registration@asdonline.com. (800) 748-5058.

Event address: 655 West 34th St., New York. Event web address:www.asdonline.com/september.

Tags: Consumer Shows Industry Conference Industry Retail.

Mercedes Benz Fashion Week

Derek Lam Fashion Show. 10:00 am. Spring 2011 collection. Invitation only. Lincoln Center Plaza. New York. request@kcdworldwide.com.

Event address: West 65th St. and Broadway, New York.

Tags: Fashion Event Fashion Show Exclusive Mix Industry Beauty Industry Fashion Industry Media Industry Retail.

Mercedes Benz Fashion Week

Timo Weiland Presentation. 10:30 am. Spring 2011 collection. Invitation only. Lincoln Center Plaza. New York. rsvp@maguiresteele.com.

Event address: West 65th St. and Broadway, New York.

Tags: Fashion Event Fashion Show Exclusive Mix Industry Beauty Industry Fashion Industry Media Industry Retail.

Elle Magazine

Second Day. 11:00 am. Featuring: Gudnitz Couture; Belle Parish by Ali Landry; WALTER presented by Sebastian; followed by Sebastian 25th Anniversary Party at the Griffin. Invitation only. Metropolitan Pavilion. New York.

Event address: 125 West 18th St., New York. Event web address:www.elle.com/Runway/Fashion-Week-Style-360-Schedule3.

Tags: After party Fashion Event Fashion Show Exclusive Mix Industry Beauty Industry Fashion Industry Media Industry Retail.

Mercedes Benz Fashion Week

Lela Rose Fashion Show. 11:00 am. Spring 2011 collection. Invitation only. Lincoln Center Plaza. New York. lelarose@kruppgroup.com.

Event address: West 65th St. and Broadway, New York.

Tags: Fashion Event Fashion Show Exclusive Mix Industry Beauty Industry Fashion Industry Media Industry Retail.

Simon Spurr Inc

Fashion Week Show. 11:00 am. Spring 2011 men's collection. Invitation only. Exit Art. New York. Contact: Chris Martinelli. simonspurr@starworksny.com.

Event address: 475 10th Ave., New York.

Tags: Fashion Event Fashion Show Exclusive Mix Industry Beauty Industry Fashion Industry Media Industry Retail.

VPL by Victoria Bartlett

Fashion Week Show. 11:00 am. Spring 2011 collection. Invitation only. Pier 59 Studios, Art and Fashion Group. New York. vpl@companyagenda.com.

Event address: Pier 59, at Chelsea Piers, New York.

Tags: Fashion Event Fashion Show Exclusive Mix Industry Beauty Industry Fashion Industry Media Industry Retail.

Broadway League

Broadway on Broadway 2010. 11:30 am. Concert. Times Square-43rd and 7th Avenue. New York.

Event address: 43rd Street and 7th Avenue, New York. Sponsored by Continental Airlines,Hue Leggings,New York Times. Event web address: www.ilovenytheater.com.

Tags: Benefit Performance Concert Industry Music Industry Theater Performing Arts Supporter Social Patron Arts Performing Arts.

Preen by Thornton Bregazzi

Fashion Week Show. 11:30 am. Spring 2011 collection. Invitation only. Milk Gallery-Studios. New York. preen@bpcm.com.

Event address: 450 West 15th St., New York.

Tags: Fashion Event Fashion Show Exclusive Mix Industry Beauty Industry Fashion Industry Media Industry Retail.

DKNY

Fashion Week Show. 1:00 pm. Spring 2011 collection. Invitation only. Stephan Weiss Studio. New York. guestrequests@dkintl.com.

Event address: 711 greenwich st, New York. Event web address: dkny.com.

Tags: Fashion Event Fashion Show Exclusive Mix Industry Beauty Industry Fashion Industry Media.

Marlon Gobel

Fashion Week Presentation. 1:30 pm. Spring 2011 men's collection. Invitation only. Four Seasons Restaurant. New York. marlongobal@gmail.com.

Event address: 99 East 52nd St., New York. Event web address: www.marlongobel.com.

Tags: Fashion Event Fashion Show Exclusive Mix Industry Beauty Industry Fashion Industry Media Industry Retail.

Elise Overland

Fashion Week Show. 2:00 pm. Spring/summer 2011 collection. Invitation only. Exit Art. New York. rsvp@maguiresteele.com.

Event address: 475 10th Ave., New York.

Tags: Fashion Event Fashion Show Exclusive Mix Industry Beauty Industry Fashion Industry Media Industry Retail.

Mercedes Benz Fashion Week

Rebecca Taylor Show. 2:00 pm. Spring 2011 collection. Invitation only. Lincoln Center Plaza. New York. requests@lsagency.com.

Event address: West 65th St. and Broadway, New York.

Tags: Fashion Event Fashion Show Exclusive Mix Industry Beauty Industry Fashion Industry Media Industry Retail.

Mercedes Benz Fashion Week

Rebecca Minkoff Presentation. 2:30 pm. Spring 2011 collection. Invitation only. Lincoln Center Plaza. New York. Contact: Meredith Viollis. meredith@rebeccaminkoff.com.

Event address: West 65th St. and Broadway, New York. Event web address:www.rebeccaminkoff.com.

Tags: Fashion Event Fashion Show Exclusive Mix Industry Beauty Industry Fashion Industry Media Industry Retail.

Mercedes Benz Fashion Week

Herve Leger by Max Azria Show. 3:00 pm. Spring 2010 collection. Invitation only. Lincoln Center Plaza. New York.

Event address: West 65th St. and Broadway, New York.

Tags: Fashion Event Fashion Show Exclusive Mix Industry Beauty Industry Fashion Industry Media Industry Retail.

Antonio Azzuolo

Fashion Week Show. 3:30 pm. Spring 2011 men's collection. Invitation only. Jack Studios - Studio 6. New York. nicole@bradburylewis.com.

Event address: 601 West 26th Street, New York.

Tags: Fashion Event Fashion Show Exclusive Mix Industry Beauty Industry Fashion Industry Media Industry Retail.

Designer's Collective

Fashion Week Show. 4:00 pm. Spring/summer 2011 collection. Invitation only. Skylight Studios - West. New York. collective@s30pr.com. (212) 252-2529.

Event address: 500 West 36th St, New York.

Tags: Fashion Event Fashion Show Exclusive Mix Industry Beauty Industry Fashion Industry Media Industry Retail.

Eric Carle Museum of Picture Book Art

Auction Preview Reception. 4:00 pm. Books of Wonder. New York. (413) 658-1100.

Event address: 18 West 18th Street, New York. Event web address: www.carlemuseum.org.

Tags: Reception Artist Arts Patron Collector Industry Publishing Social Patron Arts Museums Arts Visual Arts.

Mercedes Benz Fashion Week

Diane Von Furstenberg Show. 4:00 pm. Spring/summer 2011 collection. Invitation only. Lincoln Center Plaza. New York. request@kcdworldwide.com.

Event address: West 65th St. and Broadway, New York.

Tags: Fashion Event Fashion Show Exclusive Mix Industry Beauty Industry Fashion Industry Media Industry Retail.

Araks

Fashion Week Presentation. 5:00 pm. Spring 2011 collection. Invitation only. 303 Gallery. New York. araks@sirenpr.com.

Event address: 525 West 22nd St., New York.

Tags: Fashion Event Fashion Show Exclusive Mix Industry Beauty Industry Fashion Industry Media Industry Retail.

Carmen Marc Valvo

Fashion Week Show. 5:00 pm. Spring 2011 collection. Invitation only. NASDAQ Building. New York. pr@lcel.com.

Event address: 4 Times Square, New York.

Tags: Fashion Event Fashion Show Exclusive Mix Industry Beauty Industry Fashion Industry Media Industry Retail.

Cynthia Steffe

Fashion Week Show. 5:00 pm. Spring 2011 collection. Invitation only. Eyebeam. New York. sstiles@cynthiasteffe.com.

Event address: 540 West 21st St., New York. Event web address: cynthiasteffe.com.

Tags: Fashion Event Fashion Show Exclusive Mix Industry Beauty Industry Fashion Industry Media Industry Retail.

Mercedes Benz Fashion Week

Trias Show. 5:00 pm. Spring/summer 2011 collection. Invitation only. Lincoln Center Plaza. New York. trias@lindagaunt.com.

Event address: West 65th St. and Broadway, New York.

Tags: Fashion Event Fashion Show Exclusive Mix Industry Beauty Industry Fashion Industry Media Industry Retail.

Y-3

Fashion Week Show. 5:00 pm. Spring 2011 men's and women's collection. Invitation only. Park Avenue Armory. New York. y-3@adidas.com.

Event address: 643 Park Avenue, New York.

Tags: Fashion Event Fashion Show Exclusive Mix Industry Beauty Industry Fashion Industry Media Industry Retail.

Staerk

Fashion Week Presentation. 6:30 pm. Spring 2010 collection. Invitation only. Milk Gallery-Studios. New York. julissa@bradburylewis.com.

Event address: 450 West 15th St., New York.

Tags: Fashion Event Fashion Show Exclusive Mix Industry Beauty Industry Fashion Industry Media Industry Retail.

Tom Ford

Cocktail Party. 6:30 pm. Invitation only. Private Location.

Event web address: tomfordinternational.com.

Tags: Fashion Event Fashion Show Exclusive Mix Industry Beauty Industry Fashion.

Boudoir D'huitres

Fashion Week Show. 7:00 pm. Spring/summer 2011 collection. Invitation only. Exit Art. New York. request@acicognani.com.

Event address: 475 10th Ave., New York. Event web address: boudoir-dhuitres.com.

Tags: Fashion Event Fashion Show Exclusive Mix Food and Wine Lover Industry Fashion Industry Media.

Erickson Beamon

Fashion Week Presentation. 7:00 pm. Spring 2011 collection. Invitation only. Milk Gallery-Studios. New York. request@seventhhousepr.com.

Event address: 450 West 15th St., New York. Event web address:www.ericksonbeamon.com.

Tags: Fashion Event Fashion Show Exclusive Mix Industry Beauty Industry Fashion Industry Media Industry Retail.

Erin Fetherston

Fashion Week Show. 7:00 pm. Spring/summer 2011 collection. Invitation only. Milk Gallery-Studios. New York. erinfetherston@bpcm.com.

Event address: 450 West 15th St., New York.

Tags: Fashion Event Fashion Show Exclusive Mix Industry Beauty Industry Fashion Industry Media Industry Retail.

Mercedes Benz Fashion Week

Custo Barcelona Show. 7:00 pm. Spring 2011 men's and women's collections. Invitation only. Lincoln Center Plaza. New York. Contact: Press: Minerva Arboleya. mini@asi-mkt.com.

Event address: West 65th St. and Broadway, New York.

Tags: Fashion Event Fashion Show Exclusive Mix Industry Beauty Industry Fashion Industry Media Industry Retail.

Mercedes Benz Fashion Week

Tommy Hilfiger Show. 8:00 pm. Spring/summmer 2011 collection. Invitation only. Lincoln Center Plaza. New York. request@kcdworldwide.com.

Event address: West 65th St. and Broadway, New York.

Tags: Fashion Event Fashion Show Exclusive Mix Industry Beauty Industry Fashion Industry Media Industry Retail.

Pamela Love

Fashion Week Preview. 8:00 pm. Spring/summer 2011 collection. Invitation only. Milk Gallery-Studios. New York. grace.healy@peoplesrevolution.com.

Event address: 450 West 15th St., New York. Event web address: www.pamelalovenyc.com.

Tags: Fashion Event Fashion Show Exclusive Mix Industry Beauty Industry Design Industry Fashion Industry Media Industry Retail.

Peter Jensen

Fashion Week Presentation. 8:00 pm. Spring/summer 2011 collection. Invitation only. Milk Gallery-Studios. New York. peterjenson@kruppgroup.com.

Event address: 450 West 15th St., New York.

Tags: Fashion Event Fashion Show Exclusive Mix Industry Beauty Industry Fashion Industry Media Industry Retail.

Green Shows

Fashion Week: Opening Night Party. 9:00 pm. Cocktails and green fashion. Metropolitan Pavilion. New York. ryan@statepr.com. (646) 714-2520.

Event address: 125 West 18th St., New York. Event web address:www.thegreenshows.com.

Tags: Cocktail party Designer Showcase Fashion Event Fashion Show Opening Exclusive Mix Industry Beauty Industry Design Industry Fashion Industry Media Industry Retail Environmental.

Monday, September 13, 2010

Broadcasters Foundation of America

Celebrity Golf Fundraiser. Siwanoy Country Club. Bronxville. info@thebfoa.org. (212) 373-8250.

Event address: Pondfield Road, Bronxville. Event web address:www.broadcastersfoundation.org.

Tags: Fundraiser Golf Industry Media Association.

AHRC - Association for the Help of Retarded Children

Margiotta Memorial Golf Outing. 8:00 am. Tickets from $400.00. Lake Success Golf Club. Lake Success. Contact: Marcia Pulewitz. (516) 626-1075.

Event address: 318 Lakeville Road, Lake Success.   Event web address:www.ahrc.org/events.0.html.

Tags: Fundraiser Golf Social Patron.

Mercedes Benz Fashion Week

William Tempest Presentation.   8:30 am.   Spring 2011 collection.   Invitation only.   Lincoln Center Plaza.   New York.   (212) 242-9353.

Event address: West 65th St. and Broadway, New York.

Tags: Fashion Event Fashion Show Exclusive Mix Industry Beauty Industry Fashion Industry Media Industry Retail.

Mercedes Benz Fashion Week

Jenny Packham Show.   9:00 am.   Spring 2011 collection.   Invitation only.   Lincoln Center Plaza.   New York.   pr@jennypackham.com.

Event address: West 65th St. and Broadway, New York.   Event web address:www.jennypackham.com.

Tags: Industry Fashion Industry Media Industry Retail Fashion Event Fashion Show Exclusive Mix Industry Beauty.

HELP USA

12th Annual Golf Tournament & Auction.   10:00 am.   Brunch, competition, cocktails, and dinner.   Chaired by Kenneth Cole.   Co-chaired by Neil Cole,David Simon.   Tickets from $3,000.00.   The Golf Club of Purchase.   Purchase.   Contact: Elizabeth Litsch. elitsch@innovativephilanthropy.net.   (212) 867-1117.

Event address: 10 Country Club Drive, Purchase.   Sponsored by Kenneth Cole Productions Inc.,Risk Strategies Company.   Fax: (212) 867-3720.

Tags: Cocktail party Dinner Fundraiser Golf Social Patron.

Mercedes Benz Fashion Week

Carolina Herrera Show.   10:00 am.   Spring 2011 collection.   Invitation only.   Lincoln Center Plaza.   New York.

Event address: West 65th St. and Broadway, New York.

Tags: Fashion Event Fashion Show Exclusive Mix Industry Beauty Industry Fashion Industry Media Industry Retail.

Richard Chai

Fashion Week Show.   10:00 am.   Spring 2011 men's collection.   Invitation only.   Milk Gallery-Studios.   New York.   request@kcdworldwide.com.

Event address: 450 West 15th St., New York.

Tags: Fashion Event Fashion Show Exclusive Mix Industry Beauty Industry Fashion Industry Media Industry Retail.

Elle Magazine

Third Day.   11:00 am.   Featuring: Malan Breton presented by Rado; Rajvi Mohan presented by New Era; and Indashio.   Metropolitan Pavilion.   New York.

Event address: 125 West 18th St., New York. Event web address:www.elle.com/Runway/Fashion-Week-Style-360-Schedule3.

Tags: Industry Media Industry Retail Fashion Event Fashion Show Exclusive Mix Industry Beauty Industry Fashion.

Essence Magazine

"Fierce & Fabulous Awards" Luncheon. 11:00 am. Program. Honoring Beverly Bond,Esi Eggleston Bracey,Roslyn M. Brock,Dr. Wafaa El-Sadr,Valerie Jarrett,Sheryl Lee Ralph, Susan Rice, Faith Ringgold, Anika Noni Rose,Cicely Tyson,Kerry Washington,Wendy Williams. Mandarin Oriental New York. New York. Contact: Dana Baxter. dbaxter@essence.com.

Event address: 80 Columbus Circle, New York. Sponsored by Buick,Clinique. Noted attendees: Gayle King, Gabrielle Union. Event web address: essence.com.

Tags: Awards/Awards Shows Luncheon Social Patron Women.

Graeme Armour

Fashion Week Presentation. 11:00 am. Spring/summer 2011 collection. Invitation only. Milk Gallery-Studios. New York. graemearmour@exposure.net.

Event address: 450 West 15th St., New York. Event web address: www.graemearmour.com.

Tags: Fashion Event Fashion Show Exclusive Mix Industry Beauty Industry Fashion Industry Media Industry Retail.

Lulu Frost

Fashion Week Presentation. 11:00 am. Spring 2011 jewelry collection. Invitation only. Milk Gallery-Studios. New York. Sandra@lulufrost.com.

Event address: 450 West 15th St., New York. Event web address: lulufrost.com.

Tags: Designer Showcase Fashion Event Exclusive Mix Industry Beauty Industry Design Industry Fashion Industry Media Industry Retail.

Malan Breton Collection

Fashion Week Show. 11:00 am. Spring 2011 collection. Invitation only. Metropolitan Pavilion. New York. Spring11@malanbreton.com.

Event address: 125 West 18th St., New York. Event web address: malanbreton.com.

Tags: Fashion Event Fashion Show Exclusive Mix Industry Beauty Industry Fashion Industry Media Industry Retail.

Mercedes Benz Fashion Week

Carlos Miele Show. 11:00 am. Spring 2011 collection. Invitation only. Lincoln Center Plaza. New York. Contact: Emilia Cima. emilia@carlosmiele.com.

Event address: West 65th St. and Broadway, New York. Event web address:www.carlosmiele.com.

Tags: Fashion Event Fashion Show Exclusive Mix Industry Beauty Industry Fashion Industry Media Industry Retail.

Zero + Maria Cornejo

Fashion Week Show. 11:00 am. Spring/summer 2011 collection. Invitation only. Hosfelt Gallery. New York. zeromariacornejo@prconsulting.net.

Event address: 531 West 36th Street, New York.

Tags: Fashion Event Fashion Show Exclusive Mix Industry Beauty Industry Fashion Industry Media Industry Retail.

Reem Acra

Fashion Week Presentation. 11:30 am. Spring 2011 collection. Invitation only. Reem Acra. New York. rsvp@reemacra.com.

Event address: 730 Fifth Avenue, New York. Event web address: reemacra.com.

Tags: Fashion Event Fashion Show Exclusive Mix Industry Beauty Industry Fashion Industry Media Industry Retail.

Diesel - Black Gold

Fashion Week Show. 12:00 pm. Spring 2011 collection. Invitation only. Pier 92. New York.

Event address: 51st Street at 12th Avenue, New York. Event web address: diesel.com.

Tags: Fashion Event Fashion Show Exclusive Mix Industry Beauty Industry Fashion Industry Media Industry Retail.

Marisol Henriquez

Fashion Week Show. 1:00 pm. Spring/summer 2011 collection. Invitation only. Skylight Studios - West. New York. marisolhenriquez@s30pr.com.

Event address: 500 West 36th St, New York.

Tags: Fashion Event Fashion Show Exclusive Mix Industry Beauty Industry Fashion Industry Media Industry Retail.

Mercedes Benz Fashion Week

Tracy Reese Show. 1:00 pm. Spring 2011 collection. Invitation only. Lincoln Center Plaza. New York. requests@lsagency.com.

Event address: West 65th St. and Broadway, New York.

Tags: Fashion Event Fashion Show Exclusive Mix Industry Beauty Industry Fashion Industry Media Industry Retail.

Donna Karan Collection

Fashion Week Show. 2:00 pm. Spring 2011 collection. Invitation only. Donna Karen's Studio. New York. slane@dkintl.com.

Event address: 711 Greenwich Street, New York.

Tags: Fashion Event Fashion Show Exclusive Mix Industry Beauty Industry Fashion Industry Media Industry Retail.

Jenni Kayne

Fashion Week Presentation. 3:00 pm. Spring/summer 2011 collection. Invitation only. Industria Superstudio. New York. brendan@bradburylewis.com.

Event address: 775 Washington St., New York.

Tags: Fashion Event Fashion Show Exclusive Mix Industry Beauty Industry Fashion Industry Media Industry Retail.

Mercedes Benz Fashion Week

Monique Lhuiller Show. 3:00 pm. Spring 2011 collection. Invitation only. Lincoln Center Plaza. New York. Contact: Melissa Duren. melissa@starworksny.com.

Event address: West 65th St. and Broadway, New York.

Tags: Fashion Event Fashion Show Exclusive Mix Industry Beauty Industry Fashion Industry Media Industry Retail.

Linda Rowe Thomas

Fashion Week Show. 4:00 pm. Spring/summer 2011 collection. Invitation only. Skylight Studios - West. New York. romas@s30pr.com.

Event address: 500 West 36th St, New York.

Tags: Fashion Event Fashion Show Exclusive Mix Industry Beauty Industry Fashion Industry Media Industry Retail.

Chris Benz

Fashion Week Presentation. 4:30 pm. Spring/summer 2011 collection. Invitation only. David Rubenstein Atrium. New York. chrisbenz@kruppgroup.com.

Event address: 61 West 62nd Street, New York.

Tags: Fashion Event Fashion Show Exclusive Mix Industry Beauty Industry Fashion Industry Media Industry Retail.

Mercedes Benz Fashion Week

Alexandre Herchcovitch Show. 5:00 pm. Spring 2011 collection. Invitation only. Lincoln Center Plaza. New York. ahshow@bpcm.com.

Event address: West 65th St. and Broadway, New York.

Tags: Fashion Event Fashion Show Exclusive Mix Industry Beauty Industry Fashion Industry Media Industry Retail.

Temperley London

Fashion Week Presentation. 5:00 pm. Spring/summer 2011 collection. Invitation only. Milk Gallery-Studios. New York. scarlett@starworksgroup.com.

Event address: 450 West 15th St., New York.

Tags: Fashion Event Fashion Show Exclusive Mix Industry Beauty Industry Fashion Industry Media Industry Retail.

Asia Society

Benefit Dinner. 6:00 pm. Cocktail reception, exhibition viewing of "Yoshitomo Nara: Nobody's Fool" and dinner. Asia Society and Museum. New York. Contact: Wenxiao Guo. wguo@asiasociety.org. (212) 327-9247.

Event address: 725 Park Avenue, New York.

Tags: Dinner Fundraiser Arts Patron Collector Ethnic Asian American Social Patron Arts Libraries.

Chado Ralph Rucci

Fashion Week Show. 6:00 pm. Spring 2010 collection. Invitation only. 536 Broadway. New York. rsvp@chadoralphrucci.net.

Event address: 536 Broadway, New York. Event web address: chadoralphrucci.net.

Tags: Fashion Event Fashion Show Exclusive Mix Industry Beauty Industry Fashion Industry Media Industry Retail.

Harper's Bazaar

Accessories Bazaar Cocktail Party. 6:00 pm. Invitation only. Lincoln Center-Avery Fisher Hall. New York. bazaarrsvp@hearst.com.

Event address: 10 Lincoln Center Plaza, New York. Sponsored by Willow Club.

Tags: Awards/Awards Shows Cocktail party Fashion Event Exclusive Mix Industry Beauty Industry Fashion Industry Media Industry Publishing Industry Retail.

Mercedes Benz Fashion Week

Betsey Johnson Show. 6:00 pm. Spring/summer 2011 collection. Invitation only. Lincoln Center Plaza. New York. Contact: Katelyn Brehony. katelyn@betseyjohnson.com. (212) 244-3400.

Event address: West 65th St. and Broadway, New York. Event web address:www.betseyjohnson.com.

Tags: Fashion Event Fashion Show Exclusive Mix Industry Beauty Industry Food Industry Media Industry Retail.

Michael Bastian

Fashion Week Show. 6:00 pm. Spring/summer 2011 men's collection. Invitation only. Exit Art. New York. eugenia@michaelbastiannyc.com.

Event address: 475 10th Ave., New York. Event web address: michaelbastiannyc.com.

Tags: Fashion Event Fashion Show Exclusive Mix Industry Beauty Industry Fashion Industry Media Industry Retail.

Vogue Magazine

Cocktail Party. 6:00 pm. Book preview of "Ruben Toledo's Fashion Almanac". Invitation only. Private Location.

Noted attendees: Ruben Toledo.

Tags: Cocktail party Exclusive Mix Industry Beauty Industry Fashion Industry Publishing.

Mercedes Benz Fashion Week

Perry Ellis Show. 7:00 pm. Spring 2011 men's collection. Invitation only. Lincoln Center Plaza. New York. persvp@lsagency.com.

Event address: West 65th St. and Broadway, New York.

Tags: Fashion Event Fashion Show Exclusive Mix Industry Beauty Industry Fashion Industry Media Industry Retail.

Marc Jacobs

Fashion Week Show. 8:00 pm. Spring 2011 collection. Invitation only. 69th Regiment Armory. New York. request@kcdworldwide.com.

Event address: 68 Lexington Ave., New York. Event web address: marcjacobs.com.
Tags: Fashion Event Fashion Show Exclusive Mix Industry Beauty Industry Fashion Industry Media Industry Retail.

Tuesday, September 14, 2010

Adweek Magazine

Marketer of the Year Event. Cocktails, dinner and program. Museum of Arts & Design. New York.

Event address: 40 West 53rd St., New York. Event web address:www.adweekmedia.com/aw/events/index.html.
Tags: Awards/Awards Shows Cocktail party Dinner Industry Marketing Industry Media.

Mercedes Benz Fashion Week

Elie Tahari Show. 9:00 am. Spring 2011 men's and women's collections. Invitation only. Lincoln Center Plaza. New York. Contact: Carrie Drazan. carried@elietahari.com.

Event address: West 65th St. and Broadway, New York. Event web address: elietahari.com.
Tags: Fashion Event Fashion Show Exclusive Mix Industry Beauty Industry Fashion Industry Media Industry Retail.

Karen Walker

Fashion Week Show. 10:00 am. Spring/summer 2011 collection. Invitation only. Exit Art. New York. nicole@bradburylewis.com.

Event address: 475 10th Ave., New York.
Tags: Fashion Event Fashion Show Exclusive Mix Industry Beauty Industry Fashion Industry Media Industry Retail.

Mercedes Benz Fashion Week

Badgley Mischka Show. 10:00 am. Spring 2011 collection. Invitation only. Lincoln Center Plaza. New York. Contact: Tara Levy. (212) 730-0030.

Event address: West 65th St. and Broadway, New York.
Tags: Fashion Event Fashion Show Exclusive Mix Industry Beauty Industry Fashion Industry Media Industry Retail.

Elle Magazine

Closing Day. 10:30 am. Featuring: Bobi / Boy Meets Girl / Caravan presented by Starbucks Frappuccino; SACHIKA presented by Alisa Maria; bebe and bebe after party at Griffin. Invitation only. Metropolitan Pavilion. New York.

Event address: 125 West 18th St., New York. Event web address:www.elle.com/Runway/Fashion-Week-Style-360-Schedule3.

Tags: Fashion Event Fashion Show Exclusive Mix Industry Beauty Industry Fashion Industry Media Industry Retail.

Mercedes Benz Fashion Week

Vera Wang Show. 11:00 am. Spring 2011 collection. Invitation only. Lincoln Center Plaza. New York. verawand@prconsulting.net.

Event address: West 65th St. and Broadway, New York.

Tags: Fashion Event Fashion Show Exclusive Mix Industry Beauty Industry Fashion Industry Media Industry Retail.

Hudson Union Society

Discussion Event. 1:00 pm. Speaker(s): Bill OReilly. Private Location.

Event web address: www.runmyclub.com/hudson/eventcalendar.asp?id=206108.

Tags: Discussion Industry Government Relations Industry Media Social Patron.

Matthew Ames

Fashion Week Show. 1:00 pm. Spring 2011 collection. Invitation only. Milk Gallery-Studios. New York. info@fashionhaus.com.

Event address: 450 West 15th St., New York.

Tags: Fashion Event Fashion Show Exclusive Mix Industry Beauty Industry Fashion Industry Media Industry Retail.

Mercedes Benz Fashion Week

Rosa Cha Show. 1:00 pm. Spring 2011 collection. Invitation only. Lincoln Center Plaza. New York. Contact: TJ Allers. tallers@greatpress.com.

Event address: West 65th St. and Broadway, New York.

Tags: Fashion Event Fashion Show Film Supporter Industry Beauty Industry Fashion Industry Media Industry Retail.

Mercedes Benz Fashion Week

Bibhu Mohapatra. 1:30 pm. Spring 2011 collection. Invitation only. Lincoln Center Plaza. New York.

Event address: West 65th St. and Broadway, New York.

Tags: Fashion Event Fashion Show Exclusive Mix Industry Beauty Industry Fashion Industry Media Industry Retail.

Mulberry

Fashion Week Presentation. 1:30 pm. Spring/summer 2010 rtw collection. Invitation only. Soho House New York. New York. request@kcdworldwide.com.

Event address: 29-35 Ninth Ave., New York.

Tags: Fashion Event Fashion Show Exclusive Mix Industry Beauty Industry Fashion Industry Media Industry Retail.

Mercedes Benz Fashion Week

Max Azria Show. 2:00 pm. Spring 2011 collection. Invitation only. Lincoln Center Plaza. New York. Contact: Patrick McGregor.

Event address: West 65th St. and Broadway, New York.

Tags: Fashion Event Fashion Show Exclusive Mix Industry Beauty Industry Fashion Industry Media Industry Retail.

Mercedes Benz Fashion Week

Dennis Basso Show. 3:00 pm. Spring 2011 collection. Invitation only. Lincoln Center Plaza. New York. dennisbasso@bpcm.com.

Event address: West 65th St. and Broadway, New York.

Tags: Fashion Event Fashion Show Exclusive Mix Industry Beauty Industry Fashion Industry Media Industry Retail.

TSE

Fashion Week Presentation: Jason Wu for Tse. 3:00 pm. Spring 2011 collection. Invitation only. Industria Superstudio. New York. request@tse-us.com.

Event address: 775 Washington St., New York.

Tags: Fashion Event Fashion Show Exclusive Mix Industry Beauty Industry Fashion Industry Media Industry Retail.

Marc by Marc Jacobs

Fashion Week Show. 4:00 pm. Spring 2011 collection. Invitation only. 69th Regiment Armory. New York.

Event address: 68 Lexington Ave., New York.

Tags: Fashion Event Fashion Show Exclusive Mix Industry Beauty Industry Fashion Industry Media Industry Retail.

Pamella Roland

Fashion Week Presentation. 5:30 pm. Spring 2011 collection. Invitation only. Whitney Museum of American Art. New York.

Event address: 945 Madison Ave., New York.

Tags: Fashion Event Fashion Show Exclusive Mix Industry Beauty Industry Fashion Industry Media Industry Retail.

Hunter College

Wedding Contracts 101. 6:00 pm. Discussions and workshops. Tickets from $50.00. Hunter College. New York. Contact: Tye Robertson. events@efyp.com. (917) 597-7343.

Event address: 71 East 94th Street, New York. Fax: (516) 616-5053. Event web address:www.hunter.cuny.edu/ce.

Tags: Discussion Lecture Networking Weddings Industry Marketing Industry Meetings and Events.

Jones Magazine

Inaugural Jones Awards. 6:00 pm. Program. Alvin Ailey American Dance Theater. New York. Contact: Media: Marie Dasaro. mdasaro@thinkpublicrelations.com. (212) 343-3920.

Event address: 405 West 55th St., New York. Sponsored by My Black is Beautiful. Event web address: jonesmag.com.

Tags: Awards/Awards Shows Industry Media Industry Publishing Social Patron.

Mercedes Benz Fashion Week

Luca Luca Show. 6:00 pm. Spring/summer 2011 collection. Invitation only. Lincoln Center Plaza. New York. rsvp@lucaluca.com.

Event address: West 65th St. and Broadway, New York. Event web address: lucaluca.com.

Tags: Fashion Event Fashion Show Exclusive Mix Industry Beauty Industry Fashion Industry Media Industry Retail.

Yigal Azrouel

Fashion Week Show. 6:00 pm. Spring 2011 collection. Invitation only. Exit Art. New York. yigalazrouel@lindagaunt.com.

Event address: 475 10th Ave., New York.

Tags: Fashion Event Fashion Show Exclusive Mix Industry Beauty Industry Fashion Industry Media Industry Retail.

American Friends of the Hebrew University - President's Council

Maimonides Award Dinner. 6:30 pm. Cocktails and program. Honoring George Barrett. Location to be determined. jglodstein@afhu.org.

Event address: More information to come shortly,. Event web address:www.afhu.org/civicrm/event/info?reset=1&id=76.

Tags: Awards/Awards Shows Dinner Fundraiser Industry Diplomatic Religious Jewish Social Patron Faith Jewish.

Cooper Union for the Advancement of Science and Art

Lecture. 6:30 pm. "Promise Me", book signing and q&a. Speaker(s): Honorable Nancy Goodman Brinker. Cooper Union's Great Hall. New York. (212) 353-4195.

Event address: 7 East 7th St., New York. Event web address: www.cooper.edu.

Tags: Book Launch Party Lecture Reception Industry Media Social Patron Health Cancer.

Maimonides Medical Center

Annual Award Dinner. 6:30 pm. Cocktails and program. Honoring George Barrett. Chaired by Marc N. Casper, Phillip Frost, MD,Harvey M. Krueger,Lee Perlman, Marvin Samson, Abigail Wexner, Leslie Wexner, Shlomo Yanai. Tickets from $500.00. Tables from $10,000.00. The Pierre Hotel. New York. nsmook@afhu.org. (212) 607-8517.

Event address: 2 East 61st St., New York. Event web address:www.afhu.org/civicrm/event/info?reset=1&id=76.

Tags: Awards/Awards Shows Dinner Fundraiser Religious Jewish Social Patron Association Civil/Human Rights Education University Faith Jewish Health Clinics/Health Care.

Mercedes Benz Fashion Week

Sophie Theallet Presentation. 6:30 pm. Spring/summer 2011 collection. Invitation only. Lincoln Center Plaza. New York. sophietheallet@cmmediapr.com.

Event address: West 65th St. and Broadway, New York.

Tags: Exclusive Mix Industry Beauty Industry Fashion Industry Media Industry Retail Fashion Event Fashion Show.

G-Star

Fashion Week Show. 7:00 pm. Spring 2011 collection. Invitation only. Pier 94. New York. g-star@hlgrp.com.

Event address: 711 12th Avenue @ 55th St., New York.

Tags: Fashion Event Fashion Show Exclusive Mix Industry Beauty Industry Fashion Industry Media Industry Retail.

Mercedes Benz Fashion Week

TIBI Show. 7:00 pm. Spring 2011 collection. Invitation only. Lincoln Center Plaza. New York. Contact: Press: Liz Walker. liz.walker@tibi.com.

Event address: West 65th St. and Broadway, New York. Event web address: tibi.com.

Tags: Fashion Event Fashion Show Exclusive Mix Industry Beauty Industry Fashion Industry Media Industry Retail.

Mercedes Benz Fashion Week

Narciso Rodriguez Show. 8:00 pm. Spring/summer 2011 collection. Invitation only. Lincoln Center Plaza. New York. narcisorodriguez@prconsulting.net.

Event address: West 65th St. and Broadway, New York.

Tags: Fashion Event Fashion Show Exclusive Mix Industry Beauty Industry Fashion Industry Media Industry Retail.

Mercedes Benz Fashion Week

Toni Francesc Show. 8:00 pm. Spring 2011 collection. Invitation only. Lincoln Center Plaza. New York. requests@peoplesrevolution.com.

Event address: West 65th St. and Broadway, New York.

Tags: Fashion Event Fashion Show Exclusive Mix Industry Beauty Industry Fashion Industry Media Industry Retail.

Style.com

Tenth Anniversary Party. 9:00 pm. Invitation only. Private Location. info_style@style.com.

Event web address: style.com.

Tags: Cocktail party Exclusive Mix Industry Beauty Industry Fashion Industry Media Industry Publishing.

Rachel Roy

Fashion Week Presentation. 9:30 pm. Spring 2011 collection. Invitation only. Lincoln Center for the Performing Arts. New York. rachelroy@hlgrp.com.

Event address: 10 Lincoln Center Plaza, New York.

Tags: Fashion Event Fashion Show Exclusive Mix Industry Beauty Industry Fashion Industry Media Industry Retail.

Wednesday, September 15, 2010

Min Online

Integrated Marketing Awards. Program. Grand Hyatt New York. New York. Contact: Saun Sayamongkhun. saun@accessintel.com. (301) 354-1610.

Event address: Park Ave. at Grand Central Terminal, New York. Event web address:www.minonline.com/awards/ima2010.html.

Tags: Awards/Awards Shows Industry Media Industry Publishing.

Business Development Institute

Mobile Social Communications Conference. 8:00 am. Discussions and networking. Speaker(s): BJ Emerson, Kevin Lee, Nihal Mehta, Rick Wion. The Graduate Center, City University of New York. New York. Contact: Maria Feola. mfeola@bdionline.com. (800) 830-6687.

Event address: 365 Fifth Ave., New York. Sponsored by KIT Digital,PR Newswire,Tasti D-Lite,Yelp. Event web address: guest.cvent.com/EVENTS/Info/Summary.aspx?e=d2a52a68-23a0-4e2e-9028-ed9b039 04ce2.

Tags: Discussion Industry Conference Networking Panel Industry Internet Industry Marketing.

The Economist

"Ideas Economy: Human Potential" Conference Opening Day. 8:00 am. Discussions, workshops and networking. (Continues through September 16.). Speaker(s): David Brooks, Jordi Canals,Chancellor Joel I. Klein, Jeff Lehman, Paul Romer,John Sexton,Dr. Shirley M. Tilghman, Vijay Vaitheeswaran, Adrian Wooldridge. Tickets from $1,595.00. Chelsea Piers. New York. humanpotentialevent@economist.com.

Chelsea Piers: Pier Sixty. Event address: 23rd St. at the Hudson River, New York. Sponsored by Innocentive,Society for Human Resource Management. Event web address:ideas.economist.com/content/programme.

Tags: Discussion Industry Conference Networking Panel Industry Financial Industry Marketing Industry Media Industry Meetings and Events Industry Publishing.

Mercedes Benz Fashion Week

Bill Blass Presentation. 8:30 am. Spring 2011 collection. Invitation only. Lincoln Center Plaza. New York.

Event address: West 65th St. and Broadway, New York.

Tags: Fashion Event Fashion Show Exclusive Mix Industry Beauty Industry Fashion Industry Media Industry Retail.

Mercedes Benz Fashion Week

Tory Burch Presentation. 9:00 am. Spring 2011 collection. Invitation only. Lincoln Center Plaza. New York. spring2011@toryburch.com.

Event address: West 65th St. and Broadway, New York. Event web address:www.toryburch.com.
Tags: Fashion Event Fashion Show Exclusive Mix Industry Beauty Industry Fashion Industry Media Industry Retail.

Mercedes Benz Fashion Week

Michael Kors Show. 10:00 am. Spring 2011 men's and women's collections. Invitation only. Lincoln Center Plaza. New York.

Event address: West 65th St. and Broadway, New York.
Tags: Fashion Event Fashion Show Exclusive Mix Industry Beauty Industry Fashion Industry Media Industry Retail.

Mercedes Benz Fashion Week

Nanette Lepore Show. 11:00 am. Spring 2011 collection. Invitation only. Lincoln Center Plaza. New York. nanettelepore@lindagaunt.com.

Event address: West 65th St. and Broadway, New York.
Tags: Fashion Event Fashion Show Exclusive Mix Industry Beauty Industry Fashion Industry Media Industry Retail.

Kingsbrook Jewish Medical Center

Tenth Annual Celebrity Golf & Tennis Classic. 11:30 am. Tournament, cocktails and dinner. Tickets from $400.00. North Hempstead Country Club. Great Neck. Contact: Joyce Leiz. KJMCFdn@kingsbrook.org. (718) 604-5479.

Event address: 75 N Station Plaza, Great Neck. Event web address: www.kingsbrook.org.
Tags: Cocktail party Dinner Fundraiser Golf Tennis Health Clinic Health Hospitals.

Douglas Hannant

Fashion Week Show. 12:00 pm. Spring 2011 collection. Invitation only. The Plaza Hotel. New York. runwayshow@douglashannant.com.

Event address: 770 Fifth Ave, New York. Event web address: douglashannant.com.
Tags: Fashion Event Fashion Show Exclusive Mix Industry Beauty Industry Fashion Industry Media Industry Retail.

Jeremy Scott

Fashion Week Show. 1:00 pm. Spring 2011 collection. Invitation only. Milk Gallery-Studios. New York. requests@peoplesrevolution.com.

Event address: 450 West 15th St., New York.
Tags: Fashion Event Fashion Show Exclusive Mix Industry Beauty Industry Fashion Industry Media Industry Retail.

Mercedes Benz Fashion Week

General Idea Show. 1:00 pm. Spring 2011 men's collection. Invitation only. Lincoln Center Plaza. New York. jess@williamsonpr.com.

Event address: West 65th St. and Broadway, New York.
Tags: Fashion Event Fashion Show Exclusive Mix Industry Beauty Industry Fashion Industry Media Industry Retail.

Mercedes Benz Fashion Week

Vittadini Presentation. 1:00 pm. Spring 2011 collection. Invitation only. Lincoln Center Plaza. New York. vittadini@companyagenda.com.

Event address: West 65th St. and Broadway, New York.
Tags: Fashion Event Fashion Show Exclusive Mix Industry Beauty Industry Fashion Industry Media Industry Retail.

3.1 Phillip Lim

Fashion Week Show. 2:00 pm. Spring 2011 women's collection. Invitation only. Park Avenue Armory. New York. request@kcdworldwide.com.

Event address: 643 Park Avenue, New York.
Tags: Fashion Event Fashion Show Exclusive Mix Industry Beauty Industry Fashion Industry Media Industry Retail.

Mercedes Benz Fashion Week

Gottex Show. 2:00 pm. Spring 2011 collection. Invitation only. Lincoln Center Plaza. New York. gottex@atelierpr.com.

Event address: West 65th St. and Broadway, New York.
Tags: Fashion Event Fashion Show Exclusive Mix Industry Beauty Industry Fashion Industry Media Industry Retail.

Yigal Azrouel

Fashion Week Show. 2:00 pm. Spring 2011 men's collection. Invitation only. Pier 59 Studios, Art and Fashion Group. New York.

Event address: Pier 59, at Chelsea Piers, New York.
Tags: Fashion Event Fashion Show Exclusive Mix Industry Beauty Industry Fashion Industry Media Industry Retail.

Mercedes Benz Fashion Week

Milly by Michelle Smith Show. 3:00 pm. Spring 2011 collection. Invitation only. Lincoln Center Plaza. New York. requests@laforce-stevens.com.

Event address: West 65th St. and Broadway, New York.
Tags: Fashion Event Fashion Show Exclusive Mix Industry Beauty Industry Fashion Industry Media Industry Retail.

Marchesa

Fashion Week Presentation. 3:30 pm. Spring 2011 collection. Invitation only. Chelsea Art Museum. New York.

Event address: 556 West 22nd St., New York.
Tags: Fashion Event Fashion Show Exclusive Mix Industry Beauty Industry Fashion Industry Media Industry Retail.

Eva Minge

Fashion Week Show. 4:00 pm. Spring 2011 collection. Invitation only. Exit Art. New York. requests@peoplesrevolution.com.

Event address: 475 10th Ave., New York. Event web address: www.evaminge.com.
Tags: Fashion Event Fashion Show Exclusive Mix Industry Beauty Industry Fashion Industry Media Industry Retail.

Loris Diran Couture

Fashion Week Presentation. 5:00 pm. Spring/summer 2011 collection. Invitation only. Audi Forum. New York. pr@lorisdiran.com.

Event address: 250 Park Ave., New York. Event web address: lorisdiran.com.
Tags: Fashion Event Fashion Show Exclusive Mix Industry Beauty Industry Fashion Industry Media Industry Retail.

Mercedes Benz Fashion Week

Odd Molly Show. 5:00 pm. Spring 2011 collection. Invitation only. Lincoln Center Plaza. New York. request@seventhhousepr.com.

Event address: West 65th St. and Broadway, New York.
Tags: Fashion Event Fashion Show Exclusive Mix Industry Beauty Industry Fashion Industry Media Industry Retail.

Cosmetic Executive Women

Newsmaker Forum. 5:30 pm. Cocktails and discussion. Tickets from $175.00. Harmonie Club. New York. Contact: Tara Russo. trusso@cew.org. (646) 929-8026.

Event address: 4 East 60th St., New York. Event web address:www.cew.org/eweb/DynamicPage.aspx?webcode=EventInfo&Reg_evt_key=AD2B92A4-1 18C-4A7A-94A7-7241F0BFF81F.
Tags: Discussion Networking Industry Beauty Industry Marketing.

Mercedes Benz Fashion Week

Anna Sui Show. 6:00 pm. Spring 2011 collection. Invitation only. Lincoln Center Plaza. New York. request@kcdworldwide.com.

Event address: West 65th St. and Broadway, New York.
Tags: Fashion Event Fashion Show Exclusive Mix Industry Beauty Industry Fashion Industry Media Industry Retail.

United Cerebral Palsy Association of Nassau County

Annual Taste & Toast the Town. 6:00 pm. Tastings. Chaired by Joe Mandaro,Kathy Wilson. Tickets from $100.00. Chateau Briand. Carle Place. Contact: Michelle Gevirtz. mgevirtz@ucpn.org. (516) 377-2063.

Event address: 440 Old Country Road , Carle Place. Event web address:www.ucpn.org/index.php/site/events_detail/2010_taste_toast_the_town/.

Tags: Fundraiser Tasting Industry Medical Profession Social Patron Health Neurological.

Village Alliance

A Taste of the Village 2010. 6:00 pm. Wine and culinary tastings. Tickets from $40.00. Washington Square Park. New York. bid@villagealliance.org. (212) 777-2173.

Event address: , New York. Event web address: www.villagealliance.org.

Tags: Festival Tasting Wine Tasting Family Food and Wine Lover Industry Food Industry Restaurant Social Patron Association Economic Development.

Mercedes Benz Fashion Week

Mackage Presentation. 6:30 pm. Spring 2011 women's rtw and men's and women's outerwear. Invitation only. Lincoln Center Plaza. New York. pr@mackage.com.

Event address: West 65th St. and Broadway, New York.

Tags: Fashion Event Fashion Show Exclusive Mix Industry Beauty Industry Fashion Industry Media Industry Retail.

United Cerebral Palsy of New York City

Volunteer Appreciation Event "Celebrating 65 Years of Volunteerism". 6:30 pm. Cocktails and awards program. Speaker(s): Donna Hanover, Timothy Mandala. Prince George Ballroom. New York. Contact: James Grant. James@michaelrussellgroup.com. (917) 626-1300.

Event address: 15 East 27th St., New York. Noted attendees: John Lombardo, Edward R. Matthews.

Tags: Awards/Awards Shows Reception Social Patron Civic Health Misc.

Althea Harper

Fashion Week Presentation. 7:00 pm. Spring 2011 collection. Invitation only. Red Bull Space. New York. press@altheaharper.com.

Event address: 40-42 Thompson St, New York. Event web address: altheaharper.com.

Tags: Fashion Event Fashion Show Exclusive Mix Industry Beauty Industry Fashion Industry Media Industry Retail.

Stanley Adams Couture

Fashion Week Show. 7:30 pm. Spring 2011 collection. Invitation only. Jimmy Crystal. New York. pr@jimmycrystal.com.

Event address: 260 West 35th Street, New York.

Tags: Fashion Event Fashion Show Exclusive Mix Industry Beauty Industry Fashion Industry Media Industry Retail.

Adrienne Zernich

Fashion Week Show. 8:30 pm. Spring 2011 collection. Invitation only. National Arts Club. New York. aazinnyc@aol.com.

Event address: 15 Gramercy Park South, New York.
Tags: Fashion Event Fashion Show Exclusive Mix Industry Beauty Industry Fashion Industry Media Industry Retail.

Imitation

Fashion Week Show. 9:00 pm. Spring 2011 collection. Invitation only. Milk Gallery-Studios. New York. request@seventhhousepr.com.

Event address: 450 West 15th St., New York.
Tags: Fashion Event Fashion Show Exclusive Mix Industry Beauty Industry Fashion Industry Media Industry Retail.

Mercedes Benz Fashion Week

Zang Toi Show. 9:00 pm. Spring 2010 collection. Invitation only. Lincoln Center Plaza. New York. zangtoi@houseoftoi.com.

Event address: West 65th St. and Broadway, New York.
Tags: Fashion Event Fashion Show Exclusive Mix Industry Beauty Industry Fashion Industry Media Industry Retail.

Thursday, September 16, 2010

POSSIBLE THREATS: 84th Annual San Gennaro Fest: Mulberry St

New York Botanical Garden

Lillian and Amy Goldman Stone Mill Grand Opening. New York Botanical Garden. Bronx. (718) 817-8700.

Event address: Bronx River Parkway at Fordham Road, Bronx. Event web address:www.nybg.org.
Tags: Opening Social Patron Environmental.

Latin Vision Media

Marketing to Latinos: Travel & Hospitality. 8:00 am. Conference and business networking. TBD. info@latinvision.com.

Event address: T BD,. Event web address: www.latinvision.com/conference/travel.
Tags: Discussion Industry Conference Networking.

Feast of San Gennaro

84th Annual Festival. 9:00 am. Light fare, concerts, ceremonies and parade. (Continues through September 26.). Mulberry Street between Canal and Houston. New York. (212) 768-9320.

Event address: 125 Mulberry St., New York. Event web address: sangennaro.org.
Tags: Concert Festival Children Ethnic Italian American Family Lifestage Kids Faith Catholic.

Mercedes Benz Fashion Week

J Mendel Show. 9:00 am. Spring 2011 collection. Invitation only. Lincoln Center Plaza. New York. jmendel@lindagaunt.com.

Event address: West 65th St. and Broadway, New York.

Tags: Fashion Event Fashion Show Exclusive Mix Industry Beauty Industry Fashion Industry Media Industry Retail.

Ralph Lauren

Fashion Week Show. 10:00 am. Spring 2011 collection. Invitation only. Skylight Studios. New York. Contact: Melanie Fisher. fashionshow@poloralphlauren.com. (212) 857-2584.

Event address: 275 Hudson St., New York. Event web address: www.poloralphlauren.com.

Tags: Fashion Event Fashion Show Exclusive Mix Industry Beauty Industry Fashion Industry Media Industry Retail.

Helen Yarmak

Fashion Week Presentation. 10:30 am. Spring 2011 collections. Invitation only. Helen Yarmak Penthouse Showroom. New York. Contact: Sandy Blye. sandyblye@helenyarmak.com.

Event address: 730 Fifth Avenue, New York. Event web address: helenyarmak.com.

Tags: Fashion Event Fashion Show Exclusive Mix Industry Beauty Industry Fashion Industry Media Industry Retail.

Jeremy Laing

Fashion Week Show. 11:00 am. Spring 2011 collection. Invitation only. Milk Gallery-Studios. New York. rsvp@jeremylaing.com.

Event address: 450 West 15th St., New York. Event web address: www.jeremylaing.com.

Tags: Fashion Event Fashion Show Exclusive Mix Industry Beauty Industry Fashion Industry Media Industry Retail.

Mercedes Benz Fashion Week

Andy & Debb Presentation. 11:30 am. Spring 2011 collection. Invitation only. Lincoln Center Plaza. New York. request@seventhhousepr.com.

Event address: West 65th St. and Broadway, New York.

Tags: Fashion Event Fashion Show Exclusive Mix Industry Beauty Industry Fashion Industry Media Industry Retail.

Mercedes Benz Fashion Week

Isaac Mizrahi Show. 12:00 pm. Spring 2011 collection. Invitation only. Lincoln Center Plaza. New York. Contact: Meghan Horstmann. meghan@isaacmizrahiny.com.

Event address: West 65th St. and Broadway, New York. Event web address:www.isaacmizrahiny.com.

Tags: Fashion Event Fashion Show Exclusive Mix Industry Beauty Industry Fashion Industry Media Industry Retail.

Mercedes Benz Fashion Week

Davidelfin Show. 1:00 pm. Spring 2011 men's and women's collection. Invitation only. Lincoln Center Plaza. New York. requests@peoplesrevolution.com.

Event address: West 65th St. and Broadway, New York.

Tags: Fashion Event Fashion Show Exclusive Mix Industry Beauty Industry Fashion Industry Media Industry Retail.

Angel Sanchez

Fashion Week Presentation. 2:00 pm. Spring 2011 collection. Invitation only. 148 West 37th Street. New York. rsvp@angelsanchez.com.

Event address: 148 West 37th Street, New York.

Tags: Fashion Event Fashion Show Exclusive Mix Industry Beauty Industry Fashion Industry Media Industry Retail.

Mercedes Benz Fashion Week

Consulate General & Promotion CTR. of Argentina in NY. 2:00 pm. Spring 2011 collections. Invitation only. Lincoln Center Plaza. New York. press@acicgnani.com.

Event address: West 65th St. and Broadway, New York.

Tags: Designer Showcase Fashion Event Fashion Show Exclusive Mix Industry Beauty Industry Diplomatic Industry Fashion Industry Government Relations Industry Media Industry Retail.

Stephen Burrows

Fashion Week Presentation. 2:00 pm. Spring 2011 collection. Invitation only. 209 West 38th Street. New York. kendra@citygirlconcepts.com.

Event address: 209 West 38th Street, New York.

Tags: Fashion Event Fashion Show Exclusive Mix Industry Beauty Industry Fashion Industry Media Industry Retail.

Joanna Mastroianni

Fashion Week Presentation. 2:30 pm. Spring 2011 collection. Invitation only. 230 West 38th Street. New York. joannMST@aol.com.

Event address: 230 West 38th Street, New York.

Tags: Fashion Event Fashion Show Exclusive Mix Industry Beauty Industry Fashion Industry Media Industry Retail.

Calvin Klein

Fashion Week Show. 3:00 pm. Spring 2011 collection. Invitation only. Calvin Klein. New York. womensrunwayshow@ck.com.

Event address: 205 West 39th Street, New York. Event web address: www.ck.com.

Tags: Fashion Event Fashion Show Exclusive Mix Industry Beauty Industry Fashion Industry Media Industry Retail.

Elene Cassis

Fashion Week Show. 5:00 pm. Spring 2011 collection, followed by after-party. Invitation only. Exit Art. New York. elenecassis@lapresspr.com.

Event address: 475 10th Ave., New York.

Tags: Fashion Event Fashion Show Exclusive Mix Industry Beauty Industry Fashion Industry Media Industry Retail.

Oscar de la Renta

Fashion Week Show. 5:00 pm. Spring 2011 collection. Invitation only. 583 Park Avenue. New York.

Event address: 583 Park Ave., New York.

Tags: Fashion Event Fashion Show Exclusive Mix Industry Beauty Industry Fashion Industry Media Industry Retail.

New York Times

T Magazine Cocktail Reception. 6:00 pm. Invitation only. Location to be determined. Contact: Leslie Johnson. leslie@karlaotto.com.

Event address: More information to come shortly,.

Tags: Cocktail party Industry Media Industry Publishing.

New York Times

Cocktail Reception. 6:30 pm. Invitation only. Location to be determined.

Event address: More information to come shortly,.

Tags: Cocktail party Fashion Event Exclusive Mix Industry Beauty Industry Fashion Industry Media Industry Publishing.

New-York Historical Society

Nueva York VIP Opening. Invitation only. El Museo del Barrio. New York. bbotwinick@nyhistory.org. (212) 873-3400.

Event address: 1230 Fifth Ave., New York. Event web address: www.nyhistory.org.

Tags: Opening Reception Artist Arts Patron Collector Social Patron Arts Museums.

Nexus Showroom

Press & Buyers Cocktail Reception. 6:30 pm. Invitation only. Nexus Showroom. New York. Contact: Sasha Wolfe. info@nexusshowroom.com.

Event address: 39 West 56th Street, New York. Event web address: nexusshowroom.com.

Tags: Cocktail party Industry Beauty Industry Design Industry Fashion Industry Media Industry Retail.

Mercedes Benz Fashion Week

Naeem Khan Show. 7:00 pm. Spring 2011 collection. Invitation only. Lincoln Center Plaza. New York.

Event address: West 65th St. and Broadway, New York.
Tags: Fashion Event Fashion Show Exclusive Mix Industry Beauty Industry Fashion Industry Media Industry Retail.

Dom Perignon

Celebration. 8:00 pm. Invitation only. Private Location. ursula@nadinejohnson.com.

Tags: Fashion Event Reception Exclusive Mix.

Mercedes Benz Fashion Week

L.A.M.B. Show. 8:00 pm. Spring 2011 collection. Invitation only. Lincoln Center Plaza. New York.

Event address: West 65th St. and Broadway, New York.
Tags: Fashion Event Fashion Show Exclusive Mix Industry Beauty Industry Fashion Industry Media Industry Retail.

Calvin Klein

Post-Show Dinner. 9:00 pm. Invitation only. Private Location.

Tags: After party Dinner Fashion Event Exclusive Mix Industry Beauty Industry Fashion Industry Media Industry Retail.

Mercedes Benz Fashion Week

Ivana Helsinki. 9:00 pm. Spring 2011 collection. Invitation only. Lincoln Center Plaza. New York. Contact: Keri Ingvarsson. ivanahelsinki@thekingcollective.com.

Event address: West 65th St. and Broadway, New York.
Tags: Fashion Event Fashion Show Exclusive Mix Industry Beauty Industry Fashion Industry Media Industry Retail.

Saturday, September 18, 2010

Women's Health Magazine

Are You Game? Festival. 10:00 am. Featuring workout classes, virtual kayaking, cooking demonstrations, a makeover cabana, mechanical bull, one-on-one golf instruction, and reception. Hudson River Park at Pier 46. Contact: Shay Pantano. Shay.Pantano@Coburnww.com. (212) 730-7277.

Event address: 46 Charles Street,.
Tags: Festival Reception Social Patron Sports Supporter Sports-Athlete Health Misc. Social Services Food Banks.

Opportunities for a Better Tomorrow

Second Annual "Battle of the Badges" Charity Softball Game. 11:00 am. Tournament, family activities, K-9 demonstrations, health screenings, and performances. Tickets from $10.00. MCU Park - Coney Island. Contact: Deborah Roman. info@obtjobs.org. (718) 869-6772.

Event address: 1904 ,. Fax: (718) 369-1518. Event web address:www.obtjobs.org/index.php/101.

Tags: Competition Fundraiser Reception Children Family Social Patron Civic.

Sunday, September 19, 2010

Actors Fund

Special Performance. 8:00 pm. "Promises, Promises". Tickets from $61.50. Broadway Theatre. New York. Contact: Stephen Joseph. sjoseph@actorsfund.org. (212) 221-7300.

Event address: 1681 Broadway, New York. Event web address: wwww.actorsfund.org.

Tags: Benefit Performance Fundraiser Social Patron Arts Performing Arts Arts Visual Arts Civil/Human Rights Family/Social Services Gay Rights Health Aging Health AIDS Health Clinic Health Misc. Social Services Counseling.

Monday, September 20, 2010

POSSIBLE THREATS: UN Summit: Midtown

New York Public Library

President's Council Dinner. Cocktails and program. Invitation only. New York Public Library. New York. klaino@nypl.org. (212) 930-0553.

Event address: Fifth Ave. & 42nd St., New York. Event web address: www.nypl.org.

Tags: Dinner Lecture Arts Patron Social Patron Arts Libraries.

United Nations

Millenium Development Goals Summit Opening Day. Discussions. (Continues through September 22.). Speaker(s): Sec. Gen. Ban Ki-Moon. United Nations. New York.

Event address: First Avenue at 46th Street, New York. Event web address:www.un.org/en/mdg/summit2010/.

Tags: Discussion Lecture Industry Diplomatic Industry Political/Government Child Advocacy Civic Civil/Human Rights Health Misc.

SHARE - Self Help for Women with Breast or Ovarian Cancer

Seventh Annual "A Second Helping of Life'. 7:00 am. Cocktails, dinner, silent and live auction. Honoring Joanne Minieri,Muriel Siebert. Tickets from $300.00. Tables from $5,000.00. Pier 60. Contact: Beth Kling. bkling@sharecancersupport.org. (212) 719-0364.

Event address: Westside Highway between 19th and 20th Streets,. Noted attendees: Alex Guarnaschelli, Julie Reiner.

Tags: Auction Cocktail party Dinner Fundraiser Food and Wine Lover Industry Food Industry Restaurant Social Patron Health Cancer.

Molteni&C

Reception. 6:00 pm. Cocktails. Invitation only. Molteni&C Dada Unifor - Flagship Store. New York. rsvp@moltenidada.com.

Event address: 60 Greene Street, New York. Event web address: www.moltenidada.com.

Tags: Opening Reception Industry Design Industry Fashion Industry Media Industry Real Estate/Architecture.

Friends of the Upper East Side Historic Districts

Seventh Annual Award Dinner. 6:30 pm. Cocktails and program. Business attire. Speaker(s): William J. Higgins. Honoring David W. Levinson. Tickets from $200.00. Tables from $5,000.00. Location to be determined. info@friends-ues.org. (212) 535-2526.

Event address: More information to come shortly,. Fax: (212) 535-2155. Event web address:www.friends-ues.org/events.

Tags: Awards/Awards Shows Dinner Fundraiser Social Patron Association.

Rosie O'Donnell's Broadway Kids Foundation

Annual Building Dreams for Kids Gala. 6:30 pm. Reception and program. Honoring Neil Friedman,Michael Goldstein. Co-chaired by Robert A. Eckert, Jim Fogarty, Curt Forsythe,James M. Nederlander,James L. Neederlander,Eileen Newman,Arthur Newman, Catherine Oppenheimer,Lee Perlman,Ruthe Ponturo,Tony Ponturo,Marva Smalls,Reuven Spiegel. Tickets from $500.00. Tables from $10,000.00. New York Marriott Marquis. New York. (914) 579-1000.

Event address: 1535 Broadway, New York. Event web address:www.rosiesbroadwaykids.org.

Tags: Awards/Awards Shows Gala Industry Theater Performing Arts Supporter Social Patron.

New York Television Festival

Sixth Annual Festival Opening Night. 7:30 pm. ABC's “Detroit 1-8-7” screening. (Festival continues through September 25.). SVA Theatre. New York. (718) 350-8519.

Event address: 333 West 23rd St., New York. Event web address: www.nytvf.com.

Tags: Festival Opening Screenings Industry Film Industry Media Industry TV Arts Visual Arts.

Tuesday, September 21, 2010

AccessoriesTheShow

2010 Show Opening Day. 9:00 am. Exhibits and shopping. (Continues through September 23.). Jacob K. Javits Convention Center. New York. (212) 686-4412.

Event address: 655 West 34th St., New York. Event web address:www.accessoriestheshow.com/contact.html.

Tags: Consumer Shows Industry Conference Industry Beauty Industry Fashion.

ENK International Trade Events

Sole Commerce 2010 Show Opening Day. 9:00 am. Exhibits, discussions, fashion previews, shopping. (Continues through September 23.). Jacob K. Javits Convention Center. New York. enkshows@enkshows.com. (212) 759-8055.

Event address: 655 West 34th St., New York. Event web address:www.enkshows.com/acic/.

Tags: Consumer Shows Industry Conference.

ENK International Trade Events

Coterie Show Opening Day. 9:00 am. Presentations and exhibits. (Continues through September 23.). Jacob K. Javits Convention Center. New York. coterie@enkshows.com. (212) 759-8055.

Event address: 655 West 34th St., New York. Event web address: enkshows.com/coterie.

Tags: Consumer Shows Fashion Event Industry Conference Industry Design Industry Fashion Industry Retail.

Capsule

Capsule Show. 10:00 am. Women's summer and spring 2011 collections. Continues through September 22. Angel Orensanz Foundation for the Arts. New York. info@capsuleshow.com. (212) 206-8310.

Event address: 172 Norfolk St., New York. Event web address: www.capsuleshow.com.

Tags: Discussion Shopping/Sample Sale Trade Shows Industry Beauty Industry Fashion.

Appeal of Conscience Foundation

2010 Dinner. 6:00 pm. Reception and program. Speaker(s): Rabbi Arthur Schneier. Honoring John Elkann,Stephen Schwarzman,Hon. Dr. Manmohan Singh. Waldorf=Astoria. New York. hcannon@rubenstein.com. (212) 843-8072.

Waldorf=Astoria: Grand Ballroom. Event address: 301 Park Avenue, New York.

Tags: Awards/Awards Shows Dinner Fundraiser Industry Diplomatic Industry Government Relations Industry Political/Government Social Patron Civil/Human Rights.

Institute of International Education

2010 International Awards Gala. 6:00 pm. Cocktail reception, dinner and awards. Cocktail attire. Honoring Denise Benmosche, Amy Brandt,Chuck Close, Pamela S. Passman,Hon. Kapil Sibal. Chaired by Mark A. Angelson,Maryam Panahy Ansary, Judy Beraka, George Beraka, Neica Goldberg, Peter M. Gottesegen,Ruth Hinerfeld,S.A. Ibrahim,Henry G. Jarecki,Thomas S. Johnson, Henry Kaufman,Laya Khadjavi, Linda R. Meier, Sam Pitroda, Thomas A. Russo, Tom Sandall. Tickets from $1,250.00. Tables from $12,500.00. Mandarin Oriental New York. New York. Contact: Ashleigh Troccoli. ashleigh@bradleyevents.com. (914) 834-2868.

Event address: 80 Columbus Circle, New York.

Tags: Awards/Awards Shows Gala Industry Diplomatic Social Patron Education K-12.

Food and Beverage Association of America

Reception and Dinner. 6:15 pm. Cocktails and cruise. Tickets from $85.00. Bateaux New York/Spirit City Cruises. New York. Contact: Hermann Reiner. office@fbassoc.com.

Event address: Chelsea Piers, Pier 61, Suite 200A, New York. Event web address:www.fbassoc.com.

Tags: Cruise Ship Dinner Reception Industry Food Industry Hospitality Industry Restaurant Association.

American Federation of Arts

ArtTalks Series. 6:30 pm. Lecture and Q&A. Tickets from $10.00. Christie's Rockefeller Center. New York. arttalks@afaweb.org. (212) 988-7700.

Event address: 20 Rockefeller Plaza, New York. Event web address: www.afaweb.org.

Tags: Discussion Lecture Reception Artist Arts Patron Collector Social Patron Arts Visual Arts.

Day One

Seventh Annual Benefit to End Dating Violence Among Youth. 6:30 pm. Cocktails and dinner. Honoring Cyrus R. Vance, Jr. Co-chaired by Wendy Amstutz, Martin B. O'Connor, II Esq., William C. Silverman, Esq. Tickets from $200.00. Puck Building. New York. benefit@dayoneny.org.

Event address: 295 Lafayette St., New York. Event web address:www.dayoneny.org/dayone/2010_benefit/.

Tags: Cocktail party Dinner Fundraiser Social Patron Social Services Counseling.

New Yorkers for Children

Eleventh Annual Fall Gala. 6:30 pm. Cocktails, dinner, live Auction. Black tie. Tickets from $1,000.00. Tables from $12,500.00. Cipriani 42nd Street. New York. Contact: Jennifer Houston. jhouston@innovativephilanthropy.net. (212) 867-1117.

Event address: 110 East 42nd Street, New York.

Tags: Cocktail party Dinner Fundraiser Social Patron Child Advocacy.

Chamber Music Society of Lincoln Center

Opening Night Celebration. 7:30 pm. Concert followed by a champagne and dessert reception. Business or cocktail attire. Tickets from $250.00. Alice Tully Hall. New York. Contact: Fred Murdock. fmurdock@chambermusicsociety.org. (212) 875-5216.

Event address: 65th and Broadway, New York. Noted attendees: David Finckel,Wu Han,Gil Shaham. Event web address: chambermusicsociety.org.

Tags: After party Benefit Performance Cocktail party Concert Fundraiser Reception Arts Patron Industry Music Performing Arts Supporter Social Patron.

Wednesday, September 22, 2010

DCCC-Democratic Congressional Campaign Committee

Fundraising Dinner. Location to be determined. (202) 863-1500.

Event address: More information to come shortly,. Noted attendees: Pres. Barack Obama,Speaker Nancy Pelosi. Event web address: dccc.org.

Tags: Dinner Fundraiser Industry Government Relations Industry Political/Government Politics Democratic.

Latin Vision Media

Investing in Latin America and in the U.S. Hispanic Market. 8:00 am. Conference, discussion, and business networking. Speaker(s): Gabriel Abaroa,Maria Teresa Arnal,Mario L Baeza,Lucia Ballas-Traynor,Don Browne,Chiqui Cartagena,Tomas Cookman,Patrick Dolan,Janet Robinson. TBD. info@latinvision.com.

Event address: TBD,. Event web address: www.latinvisionfinance.com/conference.

Alzheimer's Drug Discovery Foundation

Hope on the Horizon: New Drugs for Alzheimer's Disease. 11:00 am. Inaugural fall luncheon. Tickets from $350.00. Tables from $7,500.00. The Pierre Hotel. New York. Contact: Pat Steele. psteele@alzdiscovery.org. (212) 901-8008.

Event address: 2 East 61st St., New York. Fax: (212) 935-2408. Event web address:www.alzdiscovery.org.

Tags: Fundraiser Luncheon Social Patron Health Alzheimer's.

BOMA/NY

Annual Membership Event. 5:30 pm. Cocktails and entertainment. 230 FIFTH. New York. Contact: Maria Kaminskiy. maria@bomany.com. (212) 239-3662.

Event address: 230 Fifth Ave., New York. Event web address:www.bomany.org/i4a/calendar/index.cfm?category=5.

Tags: Cocktail party Fundraiser Industry Real Estate/Architecture Social Patron.

New York Philharmonic

Opening Night Celebration of the 169th Season. 6:00 pm. Reception, concert, including performances by Wynton Marsalis, followed by dinner in the tent. Black tie attire. Co-chaired by Judith M. Carson,Russell L. Carson,Carol Sutton Lewis, William M. Lewis, Jr. Tickets from $1,500.00. Tables from $15,000.00. Lincoln Center-Avery Fisher Hall. New York. Contact: Courtney Ford. fordc@nyphil.org. (212) 875-5757.

Event address: 10 Lincoln Center Plaza, New York. Sponsored by BNY Mellon,Credit Suisse. Event web address: nyphil.org/gala.

Tags: Benefit Performance Fundraiser Gala Opening Performing Arts Televised Event Arts Patron Music Supporter Performing Arts Supporter Social Patron Arts Performing Arts.

World Yacht Cruises

Chinese Moon Festival. 6:00 pm. Cocktails, light fare and festivities. (Also taking place on September 23.). World Yacht. New York. Contact: Alyssa Carroll. Alyssa@rcourihaycpr.com.

Event address: World Yacht Marina, Pier 81, West 41st St. at the Hudson River, New York. Event web address: www.worldyacht.com.

Tags: Concert Festival Reception Ethnic Chinese American Social Patron.

Thursday, September 23, 2010

WGirls

Fourth Annual Bachelor and Bachelorette Auction. Cocktails. Location to be determined.

Event address: More information to come shortly,. Event web address: wgirls.org/what-we-do/upcoming-recent-events.

Tags: Auction Cocktail party Fundraiser Lifestage Young Professional Social Jr. Committee Social Patron Association.

New York Building Congress

34th Annual Transportation & Construction Luncheon. 11:45 am. Reception and program. Hon. chair: Dominick Servedio. MC, Otis Livingston. Honoring Husam Ahmad,Janette Sadik-Khan,Jay H. Walder,Richard Wood. Chaired by Thomas E. Diana. Co-chaired by Majid Hedayati,Gregory A. Kelly, Ira A. Levy, Bernard London, Frank T. MacInnis. Cipriani Wall Street. New York. jcarlo@marchofdimes.com. (212) 353-1143.

Event address: 55 Wall St., New York. Event web address: www.buildingcongress.com.

Tags: Awards/Awards Shows Luncheon Industry Real Estate/Architecture Industry Technology Health Pediatrics.

Sotheby's

Art of Farming Auction Opening Day. (Continues through September 24.). Sotheby's. New York. molly@mollymiddletonevents.com. (646) 483-6721.

Event address: 1334 York Ave., New York.

Tags: Auction Arts Patron Collector.

Vanidades Magazine

50th Anniversary Gala. 7:00 pm. Cocktails, dinner, entertainment and dancing. Honoring Oscar de la Renta,Carolina Herrera,Narciso Rodriguez. Trump SoHo Hotel. New York. Contact: Alexandra Akshar. aakshar@televisapublishing.com. (305) 871-6400.

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Special tax benefits could help founders and investors

by Craig Sherman and Andrew Bryant on Tuesday, October 26, 2010, 9:10am PDT

Craig Sherman and Andrew Bryant: A little noticed provision of a recently enacted federal tax law may lead to a significant increase in the formation of new startups and angel investing before the end of this year. If you have been thinking about founding or investing in a technology startup, there is no better time to jump in and take advantage of a recently enacted federal income tax benefit.

President Obama recently signed into law changes to tax law that may, under certain circumstances, exempt profits from investments in startup companies from ALL federal income tax, including alternative minimum tax. Yes, that's right, if you start a new company now and sell it more than five years from now and make a $10 million profit on the sale, you may owe NO federal income taxes on your profit.

This special tax benefit will apply only to stock issued to founders or investors between September 28 and December 31, 2010, so time is of the essence.

The founder or investor would have to buy and hold shares of a "qualified small business" for five or more years. A "qualified small business" is a C corporation engaged in an active trade or business with less than $50 million in aggregate gross assets.

If you satisfy the above requirements and certain other conditions, you may not have to pay federal income taxes on your first $10 million of gain. If there is a liquidity event within five years of your purchase of qualified small business stock, you may still be eligible to "roll over" any gains from sale of the shares tax-free within 60 days into another qualified small business.

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The Shimon Post

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HOUSING CRISIS
NO END IN SIGHT!

Presidential Press Bulletin

17 June, 2011

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Article 1.

The Guardian

Where the Arab spring will end is anyone's guess

Ian Black

June 17, 2011 -- Tunisia's Jasmine revolution will always be remembered as the event that triggered the Arab spring, which has shattered the status quo from Libya to Syria and is widely seen as the biggest transformative event of the 21st century so far. But, six months on, progress has been patchy.

Mohammed Bouazizi, the young Tunisian who started it all by burning himself to death in December 2010, had his desperate imitators in Egypt, where revolution erupted days after Zine el-Abidine Ben Ali's flight into Saudi exile; and in Jordan, which has seen sporadic unrest but no uprising.

But if the politics of the Arab spring are local, many factors are common across: young people angry and frustrated at the lack of freedoms, opportunities and jobs, unaccountable and corrupt governments, cronyism and, in a few places, grinding poverty.

Rich and poor alike lived in fear of the secret police. But Tunisia, one of the most repressive regimes, fell quickly. The decision by the army to dump the president and not crush the protests was a vital lesson for the Egyptian generals. The alternative is the cruelty of the dictators' fightbacks in Tripoli and Damascus. Regional differences were ignored in the chain reaction that followed. Yemen's protests were galvanised by the drama in Cairo's Tahrir Square but they also involved tribalism, elite rivalry and a small but alarming al-Qaida presence against a background of resource depletion and fear of state failure. Sectarian tensions were the key to the trouble in Bahrain, where a Sunni monarchy rules over a restive Shia majority. Islamists, the bogeymen of the west and the enemies of all autocratic Arab regimes, have not - yet - played a significant role. Still, Ennahda in Tunisia and the Muslim Brotherhood in Egypt have new opportunities in multi-party systems that will in turn change them. The killing of Osama bin Laden was a timely reminder of the defeat of jihadi ideology in an Arab world being transformed by people power.

Another variable has been the response: French support for Ben Ali was embarrassing; the US was praising Mubarak days before he departed. Muammar Gaddafi had no friends - and the Arab League was crucial in providing a figleaf for UN-sanctioned Nato intervention. Bashar al-Assad, by contrast, has yet to be condemned by the UN for a crackdown that has cost at least 1,300 lives. Bahrain is too strategically important to face more than a rebuke from the US. Elsewhere in the region, Israel is nervous about the demise of Mubarak. Turkey fears instability in Syria. The Palestinians, eclipsed by drama elsewhere, are trying to learn lessons. Iran's support for the Arab uprisings is sheer hypocrisy given its crushing of democratic protests since 2009.

Now the EU and the US must stop being seen by Arabs as "partners for dictators" in the words of the Tunisian academic Ahmed Driss. Billions of dollars will be needed to support democracy and development.

Tunisia and Egypt fear instability as they face free elections. But the really hard transformational work, as the respected commentator Rami Khouri has observed, "will start in the years after the new parliaments are elected and the complete infrastructure of political governance is forged according to the will of the majority".

There are exceptions. The Saudis are investing to create jobs and defuse dissent. Jordan and Morocco have tried liberal gestures. Algeria's oil wealth and experience of civil war have helped maintain peace there. But it is striking how Arab unrest has become a permanent feature of the global landscape. It is unfinished business wherever it is happening. "The outcome of this tectonic realignment is not just unpredictable but unknowable," said Prince Hassan of Jordan.

Article 2.

Al-Ahram Weekly

Netanyahu and the Arab spring

Abdel-Moneim Said

9 - 15 June 2011 -- Two regionally and globally crucial spectacles have been unfolding in the Arab world this year. The first is the wave of "revolutions", or "uprisings", or whatever they might be called that have variously overthrown regimes, striven to overthrow others, and made yet others so uncomfortable that not a day goes by without them announcing various reforms.

The second spectacle originated in Washington, where US President Barack Obama has launched his latest initiative to kickstart a new Palestinian-Israeli peace process based on the two-state solution defined by the 1967 borders, albeit modifiable by land swaps in order to accommodate the concrete changes that have taken place over the past 44 years.

What happened next will be familiar to all: Israeli prime minister Binyamin Netanyahu went to Washington, furious at Obama's announcement. In spite of the fact that both leaders addressed the American Israeli Public Affairs Committee (AIPAC), Obama's speech being conciliatory while Netanyahu remained inflexible, the bridge between the two leaders remains fragile. However, to complete the picture, there is a need to refer as well to Netanyahu's speech to the joint houses of Congress, also made during his recent visit to Washington.

The standing ovation Netanyahu received there was a palpable reminder of how deeply Israel has worked its way under America's skin and that no differences between the two seem ever likely to ever spoil their intimacy.

The two spectacles combined are planting the seeds for new events in the ongoing Arab-Israeli conflict. Obama would not have uttered the magic words "1967 borders" if he had not wanted to woo the new Arab revolutionaries and taken some credit for steering their revolution towards the establishment of democracy, the spread of freedom and the advancement of American interests in the region. The approach is perfectly in keeping with Obama's sophisticated style, which contrasts so starkly with his predecessor's crass behaviour.

It is also an approach that is not far from the target. Obama's own appearance on the scene has been a special sort of revolution, and a rich and inspiring one at that. His address in Cairo delivered a revolutionary message, equating what America stands for with "humanitarian" traits. Certainly, no one will dispute the fact that Obama had previously displayed no great fondness for Arab leaders, unlike the Bush family with its various friendships and financial connections with a good number of them. However, it has nevertheless not taken long for Obama's courtship of the Arab revolutionaries to run up against the Israeli wall, one that invariably looms up to create a gulf between the US and the Arab world.

At the same time, it is important to bear in mind that in the modern history of the Middle East, revolution and Arab awakening have long been linked with the Palestinian cause. The recent reconciliation between Fatah and Hamas, for example, probably reflected a general desire to take advantage of a propitious historical moment, which then found its reaffirmation in a global willingness to recognise a Palestinian state within the 1967 borders and a US readiness to pronounce the magic words in spite of Israel's anger.

However, the problem may be more complicated still, since the Arab revolutionary movements of the second half of the 20th century, which often built their revolutionary credentials and impetus on their championship of the Palestinian cause, themselves became the enemies of the people, being crowned during the current revolutionary period with infamy and dishonour. This applies to the former regime in Iraq, the regime in Syria and the Mubarak regime in Egypt.

The case of Hizbullah reflects this revolutionary predicament with respect to the Palestinian cause and the struggle against Israel. It suffices to recall which side this group came down upon when it had to chose between the Syrian people, who are presently fighting for their future and for the future of their children, and a regime that has thrived off a conflict in which it has never fired a single shot to liberate the Golan Heights from Israeli occupation, regardless of its political posturing.

All this leads to the question of whether Netanyahu's new position is based on some type of analysis of the ongoing Arab revolutions. Does he believe that they will turn out to be like their predecessors and feed off the Palestinian cause, for example, and has this led him to want to deal firmly with them from the outset? Egypt received a message to the effect that Al-Qaeda was in control of the Sinai and that Israel therefore felt itself free to act as it wishes.

Alternatively, could Netanyahu's thinking be headed in another direction, such that the current Arab revolutions are seeking to rectify the fatal habit of previous revolutions of focussing on external affairs at the expense of domestic needs and that they will therefore seek to avert wars, conflicts and attendant tribulations?

Surely it is no coincidence that a leading Nasserist Arab nationalist and presidential candidate, Hamdeen Sabahi, has stated several times that he has no intention of opening hostilities against Israel and every intention instead of waging war on poverty and fighting for educational and healthcare reforms and other such urgent domestic causes.

Of course, it is difficult to know what is going on in the minds of Israeli decision-makers. But the result seems clear: Netanyahu has decided to mix deterrence with opportunity. Undoubtedly, he believes that the Arab revolutions will not be prepared to move closer to peace on his terms and that they will most likely make the current peace colder than the polar icecaps. However, Israel can live with frigidity. Indeed, the Israeli right has never been keen to make the climate warmer, let alone to turn Israel into a normal country at home with others in the Middle East, a notion that seems to find few takers in Israel.

As is the case with epic narratives, the Arab spring and the Obama initiative are two threads of a story whose coming together does not herald an end, but rather forms one out of many chapters. The fate of this coming together is still difficult to determine. However, there are elements that seem to be propelling it forward, such as the recent French initiative offering to host a Palestinian-Israeli summit meeting, which must be seen against the backdrop of the looming September deadline when the Palestinians and Arabs plan to seek a UN General Assembly Resolution recognising a Palestinian state within the 1967 borders.

France is clearly striving to score points for its new more active approach to the Middle East. However, it is also working in the same direction as Obama, which is to dissuade the Palestinians and Arabs from going to the UN in September.

Curiously, all this is unfolding at a time when the Arabs' own collective body, the Arab League, is weaker than ever. No Arab summit has been convened, and the current secretary-general is preoccupied with his own political future in Egypt. Meanwhile, bilateral relations that have long rested on an Egyptian-Saudi footing are in some confusion. There seems to be considerable wavering between the principle that this basis should remain firm regardless of changes in the political regime and the conviction that no basis can remain the same when its constituent components have changed.

The components, whether in Cairo or Riyadh, are changing, but the two sides continue to reach out to the other in the midst of a raging storm.

It is impossible to predict the end of a story having so many different and intricately interwoven threads. Yet, it would be equally impossible to ignore the Palestinian factor at this moment of Arab ferment, as much as it has been impossible at times of Arab stagnation.

Article 3.

The New Yorker

Zawahiri at the Helm

Lawrence Wright

June 16, 2011 -- Dr. Ayman al-Zawahiri, an Egyptian surgeon, has come into his inheritance—Al Qaeda—at a time when the organization is at its nadir. Osama bin Laden, its charismatic founder, is dead, and after some internal debate his No. 2 man, Zawahiri, has taken control. For nearly a decade, bin Laden pushed his followers to come up with a second act to 9/11, but they were unable to match the appalling brilliance of that attack. Now it is up to Zawahiri to salvage an organization that many think (and hope) has drifted into irrelevance. Compared to bin Laden, Zawahiri lacks charisma, but it would be a mistake to underestimate his commitment and his willingness to spill blood. He was hardened by the torture he endured in the three years he spent in Egyptian prisons following the assassination of Anwar al-Sadat, in 1981, and by the savage underground war that he has fought with Egyptian intelligence agencies ever since. Zawahiri has shown a daring willingness to improvise. He inaugurated the use of suicide bombers with his failed attack on the Egyptian Interior Minister, Hasan al-Alfi, in 1993, although the tactic breaks a fundamental taboo in Islam against the taking of one's own life. He also introduced the propaganda ploy of the martyrdom video, which would become a signature of Al Qaeda. Bin Laden needed Zawahiri, not least because of his physical ailments. Although bin Laden did not have kidney disease, as was widely thought, he was often ill; Zawahiri served as his personal physician, and manipulated his position to cement their relationship. Bin Laden also depended on Zawahiri for his organizational skill and the talented men he brought with him. But Zawahiri also depended on bin Laden, whose money, mystique, and connections to wealthy Gulf Arabs gave Al Qaeda an advantage few other terror groups have ever enjoyed. Zawahiri has experience in rebuilding broken terrorist groups; his own organization in Egypt, Al Jihad, was twice wiped out by operational errors, and Zawahiri had to rally the demoralized survivors, even pretending to step aside from power, although he was never really far from the controls. His ultimate solution was to merge Al Jihad with Al Qaeda, making it into an Egyptian body with a Saudi head. Now that bin Laden is gone, the challenge for Zawahiri will be to keep non-Egyptians in Al Qaeda. Members pledged their loyalty to bin Laden personally, not to the organization, so a new round of declarations will have to be made, providing Zawahiri an immediate test of his popularity. One big difference in Zawahiri's leadership from that of his predecessor is likely to be a renewed focus on Egypt. Zawahiri's terrorist career began when he was fifteen years old, when he started a cell to overthrow the Egyptian government. Now the government actually has been overthrown, no thanks to Zawahiri's efforts. The country is in a tumultuous and formative but also vulnerable moment in its history, which Zawahiri will seek to exploit. He knows that Egypt is the real game in the Islamist contest for power. The future of Egypt will determine much of what happens in the rest of the Arab world. No matter how it turns out, the Egyptian revolution will be seen historically as a bookend to the Iranian revolution in 1979, which added reality to the radical Islamist agenda and inspired so many young Muslims, like Zawahiri, to take up jihad. Iran showed them that they actually could take over a major Muslim country and turn it into a theocracy. Zawahiri was always frustrated that it was a Shiite country that became the first important Islamic theocracy in the modern world. He will devote himself to making Egypt a Sunni replica of the Iranian state, and not the end of a trend that has led so many Muslim countries into fundamentalist dead ends.

Article 4.

NYT

Does Foreign Policy Matter?

Roger Cohen

June 16, 2011— Perhaps foreign policy doesn't matter in U.S. elections. President George H.W. Bush orchestrated a peaceful unwinding of the Cold War that united Germany within the West. A Europe divided became whole and free. Hundreds of millions of people benefited. They still do. This was one of the finest hours of American diplomacy. His reward for great achievements on the world stage was to be defeated in the 1992 election. After all, he'd raised taxes. He'd let the size of government grow. Confronted by a grocery store checkout scanner, he looked like a genteel space cadet. So he had his comeuppance from Bill Clinton, who'd got how groceries get bought.

Yes, Americans want money in their pockets that keeps food on the table: to heck with huge events across the oceans. They think foreign policy is for the birds. Or do they? Americans have an exalted sense of their nation and its liberating mission. That self-image stops making sense if America is not engaged. The authoritative 2010 survey of American public opinion by the Chicago Council on Global Affairs found that more than 8 out of 10 Americans think it's either "very desirable" or "somewhat desirable" for the United States to "exert strong leadership in world affairs."

In the real world that means doing foreign policy. I see Americans torn. There's a quasi-isolationist urge. They're tired of wars. They want jobs. They see problems piling up on the home front that they want fixed ahead of any foreign adventures. At the same time something rankles when they hear talk of American decline and the end of the American century and China rising. They want a president to stand tall for American greatness if only to anaesthetize them against day-to-day hardship.

Republican wannabes sense all this. To judge by the early stages of the 2012 campaign, they think foreign policy might matter after all. They're trying to cast Barack Obama as a president who has sold America short, an impostor who has ditched the mystical belief in the unique calling of the United States that is American exceptionalism.

So Mitt Romney says Obama takes his values not from the small towns of America but from "the capitals of Europe." Obama treats Israel the way European countries do — with "suspicion" and "distrust." He's offering "European answers to American problems." He's projecting a weak United States: "We're following the French into Libya." The president is a naïve idealist undermined by his "questioning as to whether America is an exceptional nation."

For Europe, in the above characterization, read land of feckless socialists on welfare bent on universal health care.

Not to be outdone, Newt Gingrich has decrypted in Obama a "Kenyan, anti-colonial" worldview.

Gingrich wants a "foreign policy that is clear about the evil that we face" — that would be Shariah law among other things — and rooted in this universalist message: "America is still the last, best hope of mankind on Earth." As for Sarah Palin, she attributes most of Obama's problems to what she's called his "lack of faith in American exceptionalism." I have several reactions to this that all fit under the rubric: baloney! First, we're not in 1990 any longer: America remains dominant but cannot resolve major problems alone and will in the next decade, by some estimates, see China overtake it as the world's largest economy. Second, it's precisely Republican factionalism in Washington that's stopping the United States from attaining again the greatness Republicans invoke. Remember James Madison's admonition to “break and control the violence of faction” through a “well-constructed Union.”

Right now factionalism leaves critical budget challenges unmet, stops serious investment in education and research, and leaves America trailing China on the green technologies that will be big job-creators in coming decades. The road to the American future is not “Drill, Baby, Drill!”

Third, it’s just delusional to imagine that any president, Republican or Democrat, confronted by the meltdown of 2008, would not have seen as a core task a retrenchment of U.S. overseas commitments in an attempt to bring them in line with diminished resources.

But with an angry, anxious nation, Republicans are betting that invocations of greatness and dominance, however illusory, will resonate. Bruce Jentleson, a political scientist at Duke University, said, “After the killing of Osama bin Laden, they can’t attack Obama as a wimp, but they will attack him as not being a real American.” Obama, he added, must answer by demonstrating “what this generation of Americans is going to show the world, how it’s going to compete in a global era. Against the illusion of restoration, he must offer adaptation.”

With the U.S. economy wobbling, Obama runs the Bush Sr. risk. He got Bin Laden and has been on the right side of the Arab Spring — what Timothy Garton Ash has called “the most hopeful set of events in the 21st century so far, comparable in scale and potential to 1989.” Americans respond to that kind of hope. They care about foreign policy and see through foreign posturing. What they need now from Obama is a better sense of how their economy can thrive in this changed world.

Article 5.

Los Angeles Times

European Union: Everywhere you look, a crisis

Timothy Garton Ash

June 16, 2011 -- Like an overladen container lorry laboring up a steep hill, the European Union is close to stalling. Greece is the most urgent part of this crisis. Between the fury on the streets of Athens and the continued disunity of decision-makers in Brussels, Berlin, Frankfurt and Luxembourg, the crunch could come any day. But it's not just Greece. In Ireland, Portugal and Spain too, the anger is boiling over, as people feel that the young, the poor and the unemployed are being forced to pay for the selfish improvidence of their politicians — and of the French and German bankers, who loaned profusely where they should not have loaned at all.

Across the Continent, the legions of the indignados, as they are called in Spain, and the aganaktismenoi (the outraged), as they say in Greece, are growing. And it's not just the Eurozone. Every single major project of the European Union is faltering. France and Italy are suggesting that the achievement of the Schengen area, in which 25 European countries have removed border controls, should be chipped away, just because a few thousand people from convulsed North Africa have taken refuge on the Italian island of Lampedusa. Many European countries are already in a panic about the integration of immigrants and people of migrant origin, especially those who are Muslims. Solidarity and social justice, central values of the post-1945 European project, are in retreat almost everywhere as a result of growing inequality and spending cuts to tackle public debt.

In the Arab Spring, Europe faces the most hopeful set of events in the 21st century so far, comparable in scale and potential to 1989; but the Continent's collective and institutional response to this historic opening has been feeble. Even in the most hopeful cases — Tunisia and Egypt — we may have only a few months in which to prevent the Arab Spring becoming an Arab fall. The disappointed hopes of that half of the population that is under 30 would then produce further, larger immigrant surges to Europe. In their own countries, Islamists would exploit the chances and the confusion of semi-freedom.

The European-led military intervention in Libya was always likely to be a slow, difficult grind, but it has painfully exposed Europe's chronic failure to concentrate its military capabilities. Already, some of the European powers involved are running short of munitions. You can understand why U.S. Defense Secretary Robert M. Gates was scathing about this in Brussels last week. Even enlargement, Europe's most successful project, is close to stalling. In his victory speech after the recent Turkish elections, Prime Minister Recep Tayyip Erdogan did not even mention the EU. Yes, Croatia will probably join the EU in 2013, and that's good news. But Croatians might be forgiven for wondering what exactly they will be joining. Retired prime ministers and foreign ministers never tire of attributing this faltering of the European project to the lack of leadership. (Subtext: It was all so much better when we were in charge.) This is true, but less than half the story. For although the quality of European leadership is somewhat poorer than it was a quarter-century ago, the need for it is greater. Why? Because all the great underlying motivators of the European project back in the days of Helmut Kohl, Francois Mitterrand and Jacques Delors, and even more so in the time of the founding fathers, have faded or disappeared. Those powerful driving forces included searing personal experiences of war, occupation, holocaust, fascist and communist dictatorships; the Soviet threat, catalyzing west European solidarity; generous, energetic American support for European unification; and a West Germany that was the mighty engine of European integration, with France on top as the

driver. All these are now gone, or very much diminished. While there are intellectually convincing new rationales for the project, including the rise of non-Western giants such as China, rationales are no match for emotional motivators. The key to so much of this, especially on the economic side, is Germany. For much of its history, what has become the European Union pursued political ends by economic means. For Kohl and Mitterrand, the euro was mainly a political project, not an economic one. Now the boot is on the other foot. To save a poorly designed and overextended monetary union, the political must ride to the rescue of the economic. That will require Angela Merkel's leadership. If we are talking about the European economy and currency, Germany is the indispensable power. Only the combination of Germany and the European Central Bank, working in unison, has a chance of calming the mighty markets.
For more than a year now, Merkel has attempted to find the narrow — perhaps nonexistent — line where the minimum that can be done to save the embattled Eurozone periphery meets the maximum she thinks German public opinion will bear. She has then tried to win her Eurozone partners to that course. So far, it has not worked. Now she needs to start from the other end: Work out, with the central bank and other Eurozone governments, what is the best, most credible deal available, and then put all her authority on the line to convince a reluctant German public that this is in the long-term, enlightened national self-interest of Germany. And it is. For no one has more to lose from the disintegration of the Eurozone than the Continent's central economic power. It may soon be too late.

Timothy Garton Ash, a contributing editor to Opinion, is a senior fellow at the Hoover Institution and professor of European studies at Oxford University.

Article 6.

The American Interest

What Would War with Iran Look Like?

Jeffrey White

July - August 2011 -- The debate over what to do about an Iranian Islamist regime apparently bent on acquiring nuclear weapons has been on or near our front burner for at least six years, and is now almost a settled feature of the policy landscape. There is general agreement in the United States on two points. First, an Iranian nuclear weapons capability is “unacceptable”, as both the Bush and Obama Administrations have put it; and second, we prefer getting to an acceptable outcome without using force. The debate gets testy when we consider that means short of force, such as sanctions and covert technical sabotage, might not work.

It may be too simple to reduce the argument to just two sides—those who fear the regime’s acquisition of nuclear weapons more than the consequences of a war to prevent it, and those who fear the consequences of a war above all else—but in this case simplicity has the virtue of capturing the essence as observers ponder which set of unpalatable risks they would rather run. What is remarkable, though hardly surprising, is that the two sides usually put forth very different assessments of what using force would entail. Those who fear Iranian nukes above all else tend to minimize the risks of using force, while those who fear war tend to exaggerate them. Neither side, however, has persuasively spelled out the reasons for their assessment, leading one to suspect that much of the argument rests on less than rigorous analysis.

What would an honest assessment of the risks of military conflict with Iran look like? How should we think about it? These are difficult questions even for those who are not partisans of one side or the other. Wars are notorious for yielding unintended and unexpected consequences; for reasons explained below, a war against Iran is even harder than usual to bound analytically.

Complexity, Uncertainty and War

Our first consideration in analyzing the likely course of war with Iran is that a U.S.-led attack would be merely the first phase of a war, the opening act of an extended drama whose scenes would unfold, not according to any script, but to an emergent logic of its own. Given the political context in which military engagement would rest, even a minor attack would likely become a major test of strength involving not only the United States and Iran but also a host of allies and associates. It is therefore disingenuous to try to frame military action against Iran as a simple “raid” or even a broader “operation.” We are talking here about war, with attendant potential high costs to all combatants in terms of military casualties, civilian damage and economic disruption.

At least three concepts are key to any coherent discussion of a U.S.-Iranian military engagement: complexity, uncertainty and war itself. By complexity we mean the number of moving parts in a given situation: actors, processes and the connections among them. By uncertainty we mean structural uncertainty—that is, not just ignorance of the magnitudes of agreed casual factors, but the ignorance of the causal factors themselves, and their mutual relations. For example, not only may the U.S. government not know, say, the technical status of the Iranian nuclear program, or the actual state of readiness of Iranian forces. It may not know (or worse, have wrong) the decision-making and implementation protocols of the Iranian government, how the Iranian people and military would react to an attack, what Tehran would ask its allies and proxies to do, and what in fact they will do.

Enemy disinformation, as well as simple error, can also set us on the wrong track. The enemy acts not just on the battlefield but also through an ability to influence our understanding of the situation by means of denial and deception. In this and other ways complexity reinforces uncertainty.1 The large number of actors involved in the Iranian situation would make it very difficult to discern clearly what is happening once the shooting starts, and the scene would remain very fluid as long as the fight persisted, and very likely for a good while afterward.2

As to the meaning of war, it may hardly seem worthwhile to probe something so self-evident, except that it is not self-evident anymore, if it ever was. A simple definition of war is the waging of armed conflict against an enemy, but this is too limited a concept in the 21st century. War in our time involves simultaneous conflict in the military, diplomatic, economic and social domains on four levels: political, strategic, operational and tactical.3 While a war with Iran might begin in the military domain, it would likely expand to others, and while it might begin at the operational or tactical level it would soon encompass strategic and political levels as well.

How these twin expansions would take place has everything to do with context. All wars have one. Would a U.S.-Iran war break out during a protracted diplomatic process, or in the absence or abeyance of one? Would it happen during a period of increasing tension and military readiness, or out of the blue, after one party thinks that the dangers of war have subsided? Would the U.S. government assemble a broad “coalition of the willing”, just a few close allies-in-arms at the ready, or go it alone, even actively dissuading Israel from joining an attack? What would the domestic political situation be in the United States? Would there be an internal political consensus to act, or would there be an active, acrimonious debate? Would the American people be prepared for the aftermath of an initial attack, including rising oil prices and falling stock values? What would the economic situation be like in the United States and beyond? The answers to these questions would have a substantial impact on the war's course, conduct and outcome.4

Whose War, for What Purpose?

Perhaps the most critical contextual element concerns how senior U.S. decision-makers, the presumed initiators of war in this case, would construe their war aims.5 These aims must somehow affirm that force can be employed to achieve reasonable political and strategic objectives, but those objectives could range from the limited to the expansive. Three sets of objectives come readily to mind.

First, a war could aim to simply delay the Iranian nuclear weapons program through the physical destruction of key facilities and human assets: a Peenemünde option, so to speak.6 Second, war could aim to effectively end the Iranian nuclear program by inflicting broad damage on its components and other key regime assets, military, infrastructure and leadership, combined with the threat to re-strike as necessary: a submission option. Third, war could aim to topple the regime through a concerted campaign against its assets and supporting mechanisms, coupled with support to its presumably less WMD-desirous opponents: a regime change option.

The U.S. government has military options corresponding more or less to these aims. A Peenemünde option would presuppose a narrowly focused, short duration strike largely limited to nuclear facilities. It would aim to inflict serious damage, but also to restrict the scope of conflict. Such an attack would rely on U.S. stealth systems, electronic warfare, cruise missiles and air power. U.S. allies could play a supporting role, especially in dealing with an Iranian response, but American forces would carry the brunt of the action.

A submission option would call for a sustained air and naval campaign against nuclear associated facilities, air defense systems, command centers, offensive missile forces, naval forces and the Army of the Guardians of the Islamic Republic (IRGC), the regime's praetorian guard and shock troops. This campaign would aim to severely damage the nuclear program, limit Iran's ability to defend against the attack (and subsequent restrikes, if necessary) and reduce its capabilities for post-attack retaliation.

A regime-change option would require a broad military offensive that could include nuclear facilities, air defenses, Iran's retaliatory capabilities, leadership targets, regime supporters, and national infrastructure and economic targets. This could include putting some forces on the ground to collect intelligence and neutralize specific targets that are difficult to strike effectively with air power. No large-scale ground operations are likely, but they cannot be ruled out at some levels of conflict and in some scenarios, such as those that posit a need to open and secure passage through the Strait of Hormuz and Persian Gulf.

In general, the more expansive a war's goals as a plan escalates from strike to campaign to broad offensive, the greater the force needed to achieve those goals, the greater the uncertainty in achieving them, and the greater the consequences of both success and failure. Moreover, a war's goals at the outset of conflict may not remain stable. Early sudden successes or unanticipated failures can lead to the escalation of initially limited goals, particularly if terminating hostilities proves difficult. Lateral expansion as well as escalation is also possible: Iranian leaders might surrender or agree to a truce but be unable to enforce a similar decision on Hizballah leaders or terror agents around the world. This leads to yet another layer of complexity and uncertainty: Whose war would this be?

A U.S.-Iranian war would probably not be fought by the United States and Iran alone. Each would have partners or allies, both willing and not-so-willing. Pre-conflict commitments, longstanding relationships, the course of operations and other factors would place the United States and Iran at the center of more or less structured coalitions of the marginally willing.

A Western coalition could consist of the United States and most of its traditional allies (but very likely not Turkey, based on the evolution of Turkish politics) in addition to some Persian Gulf states, Jordan and perhaps Egypt, depending on where its revolution takes it. Much would depend on whether U.S. leaders could persuade others to go along, which would mean convincing them that U.S. forces could shield them from Iranian and Iranian-proxy retaliation, or at least substantially weaken its effects.

Coalition warfare would present a number of challenges to the U.S. government. Overall, it would lend legitimacy to the action, but it would also constrict U.S. freedom of action, perhaps by limiting the scope and intensity of military operations. There would thus be tension between the desire for a small coalition of the capable for operational and security purposes and a broader coalition that would include marginally useful allies to maximize legitimacy.

The U.S. administration would probably not welcome Israeli participation. But if Israel were directly attacked by Iran or its allies, Washington would find it difficult to keep Israel out—as it did during the 1991 Gulf War. That would complicate the U.S. ability to manage its coalition, although it would not necessarily break it apart. Iranian diplomacy and information operations would seek to exploit Israeli participation to the fullest.

Iran would have its own coalition. Hizballah in particular could act at Iran’s behest both by attacking Israel directly and by using its asymmetric and irregular warfare capabilities to expand the conflict and complicate the maintenance of the U.S. coalition. The escalation of the Hizballah-Israel conflict could draw in Syria and Hamas; Hamas in particular could feel compelled to respond to an Iranian request for assistance. Some or all of these satellite actors might choose to leave Iran to its fate, especially if initial U.S. strikes seemed devastating to the point of decisive. But their involvement would spread the conflict to the entire eastern Mediterranean and perhaps beyond, complicating both U.S. military operations and coalition diplomacy.

It seems fairly clear then that a conflict with Iran is unlikely to be an isolated event in which the U.S. strikes, Iran retaliates, and it's over—with Iran either left with a viable nuclear program or not. War is far more likely to be a series of actions played out over time at varying levels of intensity and with a strong potential for escalation. Nor can war with Iran be limited to military action; it will extend to the diplomatic, economic and social domains. U.S. decision-makers might prefer a limited war that would privilege U.S. military and technical advantages, but Iran can force a broader conflict, where it can employ its own political, economic and social means of waging war, including terrorist attacks on U.S. soil and against U.S. interests abroad. The challenge for the United States would be to conduct the conflict so that the longer and broader the war, the more Iran would lose. That objective should affect how the U.S. government would fight in all four domains.

This means that even if the shooting starts at the military tactical or operational levels, the United States or a U.S.-led coalition must plan for all four levels of war and organize itself to ensure unity of command and purpose across those levels. It will, for example, find itself involved in a "secret war" of terrorist attacks and special counterterror operations outside the main theater of conflict. It will find itself in a "political war" involving Iranian and allied diplomatic and information operations to weaken support from other states and actors for the U.S. coalition and mobilize support for Iran. It will find itself in an "economic war" featuring Iranian efforts to disrupt the oil market.7 A "social war" would involve appeals to Islamic solidarity and attempts to weaken popular support for adversary governments through influence operations and attacks aimed at civilians. In such a broad and protracted contest, the United States might not enjoy a favorable balance of advantages. It is by no means clear, either, that the U.S. government is structured to effectively prosecute such a war, or that its intelligence capabilities are oriented properly toward supporting it.

Given these caveats and complexities, it seems to follow that if the United States chose to attack Iran, it would do so in ways that would prevent Iran from expanding the conflict into areas where it held an advantage. The reasoning might go something like this: Since the Iranian regime has many ways to widen a war into domains that do not favor the United States, the best option is to execute regime-change before the regime can open its bag of tricks. Or it might go like this: Start small, but if the Iranians escalate the war, shift immediately to a regime-change option before they can succeed. Almost needless to say, these are hard-to-control and high-risk approaches. A decapitation strategy, we know, did not fare so well in March 2003 against Iraq, and it would probably be harder to pull off against a more deeply institutionalized polity like Iran.

As for a "start small" approach, let's suppose that the war begins with a limited air and naval operation. Iran could respond in a limited "tit-for-tat" way. But the regime might conclude that the operation is intended to remove it from power (or succeed in doing so unintentionally); if so, it might respond with a high level of violence along several axes of capability. There is simply no way to predict with confidence how radicals in Iran would respond to an initially limited U.S. attack. We must base our predictions largely on what the leadership says, the Iranian regime's history and our limited intelligence on the regime's internal dynamics.8 All this is subject to interpretation by experts employing various explicit or implicit models, the most prominent of which casts the regime as a "rational actor" that calculates risks and rewards like any Western state. In this model the highest goal is regime survival, a notion that doesn't necessarily apply to the Iranian clerical regime. Clerics, even Christian ones from an earlier age, have been known to take their otherworldly prerogatives seriously.

All we can say, then, is that the regime would not try to martyr itself, nor would it be passive. Most likely, Iran would seek to prolong and expand the war, attrite U.S. forces and morale, and weaken the resolve of coalition members. Iran has the means, methods and allies with which to respond in this fashion, and it has made clear that it would use them.9

Important Iranian conventional war assets include short- and medium-range missiles; strike aircraft; missile-equipped naval combatants and small boats; naval mine-laying capabilities; regular army and IRGC special forces; and air defense and coastal defense missiles. These conventional capabilities provide Iran a substantial ability for a local fight in the Strait of Hormuz, the Persian Gulf and along its borders.10 Iran "leans" on the Persian Gulf states from a military and political perspective. Shi'a populations in Bahrain and Saudi Arabia could be a useful resource and environment for terrorist and irregular operations.

While the Iranian military is at its most dangerous close to its frontiers, we are not "safe" from it anywhere. Missile systems (principally the Shahab 3 variants and Sejjl types) allow Iran to strike targets throughout the Middle East, including population centers, military facilities, infrastructure and U.S. forces based in the region.11 Iranian missile numbers and launchers are limited, but Iran has other means of waging a global conflict, including its allies. For instance, Iran would likely attempt to induce Hizballah to attack

Israel. Likewise, Hizballah would expect Iran to assist it and any conflict with Israel. Either case could eventually involve Syria.

Hizballah can now strike targets throughout Israel. Its missiles and rockets are also accurate enough to hit military installations and other important facilities, and it can fire as many as 500–600 per day.

Hizballah also has the ability to conduct terrorist or special operations against civilian, military and infrastructure targets outside the immediate theater of war. Sheikh Nasrallah has plausibly threatened to attack shipping in the eastern Mediterranean in the event of a conflict with Israel.12 If Hizballah were to gain access to Syria’s P-800 Yakhont supersonic cruise missile system—a distinct possibility—it could potentially strike targets as distant as 300 kilometers from the Lebanese coast.

Syrian military forces are optimized and deployed for war with Israel, so it would have only a limited ability to directly assist Iran in a conflict with the United States. Syria’s missile systems could target military sites, logistics facilities and airfields in Israel. Syria’s Yakhont coastal defense cruise missile system gives it an enhanced capability to threaten naval and merchant vessels in the eastern Mediterranean.

Hamas is also part of this threat environment, although its offensive and defensive capabilities are much more limited than Hizballah’s.

Hamas’s offensive capabilities rest on mortars and rockets of gradually increasing range, bringing more of central and southern Israel under threat with every upgrade. Hamas can now reach central Tel Aviv and beyond Beersheba in southern Israel.

Iran will likely supplement this proxy war by exploiting “images of victory”—such as sinking a U.S. naval unit or displaying U.S. casualties and prisoners to undermine support for the U.S. action and bolster its own supporters.

U.S. conventional military capabilities, especially combined with those of its likely allies, are of course far superior to those of Iran. In many recent years the size of the U.S. defense supplemental alone exceeded the entire Iranian defense budget. But a fight with Iran would not be a fair or clean fight. Winning in any meaningful sense might prove costly.

Escalation

If Iran's advantage lies in broadening and widening a conflict once begun, how might we expect its leaders to go about it? At least three types of escalation are open to Tehran: horizontal, vertical and domain.

Horizontal escalation involves the spread of hostilities from beyond the immediate area of conflict to additional geographic areas and political actors.13 Iran's means and methods, as discussed above, give it the ability to escalate horizontally within the Middle East region and beyond to include Europe and the United States.

Vertical escalation involves the employment of new or increasingly potent weapons systems, attacking new types of targets, or introducing additional types of forces into the conflict.14 What begins as essentially a fight between U.S. and allied air and naval strike assets and Iranian air defense assets could be quickly expanded by Iran to the use of offensive missile systems and naval surface and sub-surface forces in retaliation. Iranian escalation to the employment of WMD (if a war occurred after an Iranian breakout) seems unlikely short of an imminent threat to the regime, but that threat would be hanging in the air as fighting escalated.

Domain escalation refers to the expansion of the conflict from the purely military domain to the diplomatic, economic and social domains, in which Iran has some advantages.

In summary, an attack on Iran could produce dynamics that would push either or both sides to escalate the conflict even if neither had an interest or an initial intention to do so. Iranian civilian casualties, for example, could provoke Iran to step up its response. This becomes more likely as the scale of a U.S. attack increases. Downed U.S. aircrews could lead to search and rescue operations that could become significant military actions in their own right. The need to restrike targets that were missed or inadequately damaged could also prolong the conflict and involve additional forces. As the conflict developed, internal and external political pressures could press both antagonists to escalate the fighting.

On the other hand, there may also be countervailing pressures. A very successful operation could cause Iran to seek a rapid exit, at least from the military aspect of the war. So, too, could increased domestic unrest within Iran. International political pressure brought about by economic disruption of the oil market and fears of military escalation could work to restrain the United States. But we cannot rule out the possibility of escalation, and that knowledge should reinforce the need for clarity of purpose and a full understanding of the risks involved before we pull the trigger.

How It Ends

Just as we cannot rule out escalation, we cannot rule out the harmful protraction of a war. Every war has to end, but how it does so is no simple matter. Even if it were soundly defeated, Iran could complicate the endgame. It’s not simply a matter of our declaring “mission accomplished” and bringing the troops home. As retired Brigadier General Huba Wass de Czege writes:

Although Sun Tzu warned statesmen and generals many centuries ago that long wars benefit no one, they continue to occur, and for some very fundamental human reasons. Statesmen and generals who start wars commit themselves to worthy war aims that are expressed far too specifically—and too soon—in order to get the polity on board. Then they conceive of a strategy based on what they think they know about their capabilities and the situation. They begin taking concrete steps along the path that they think will get them to that end. They learn far too slowly that what they initially thought they knew was in fact wrong or no longer relevant. . . . Things can get much more convoluted by adding allies, different influential actors among the polity, and multiple adversaries. This is why wars are easier to get into than out of.15

Knowing when to end a war relates to war aims and measures of success. A war's aims should be definitive enough so that success can be measured in some clear way. This is easiest to do where the aims concern discrete things such as the destruction of material targets. Measuring success becomes harder as aims become more political and psychological, such as weakening or toppling a regime, encouraging opposition or deterring further action. Then, too, war aims can expand as fighting escalates or broadens. In a situation in which Iran has retaliated strongly and managed to inflict losses (especially civilian losses) on the United States or its coalition partners, we should expect to hear calls to inflict more damage, to punish the regime and its forces, to bring a "decisive" end to the conflict.

Short of inflicting a total defeat on Iran, an outcome that seems scarcely conceivable, exiting the war could be challenging if Iran chooses to fight on in some form of asymmetric conflict. We might then have to compel Iran to quit, and that could potentially require the application of force well beyond what was originally agreed upon within the United States or with coalition partners. Even then, if the Iranian regime survives at all, it is likely to declare victory, and many of its supporters would believe it. How or when a war with Iran would actually end is therefore no easy topic to nail down. Any attack on Iran of sufficient scale to significantly damage its nuclear program would have rolling consequences both in the short and long term.

After the last bomb falls there will be a new reality in the region and beyond.

In the short term, there would be consequences in the military, diplomatic, economic and social domains. The intensity and locus of these consequences would depend on the outcome of the attack and conflict, but there would be "battle damage" in all domains. Short-term consequences would likely include a tense and unstable military situation (unless the conflict ended cleanly) that would require the commitment of forces for monitoring and reacting to emergent threats; and also a potential political crisis in the region propelled by instability and uncertainty about the future, including residual Iranian capabilities to retaliate directly or indirectly.16 The oil market would remain in shock for some time after an attack. Naval mines, wartime damage to facilities and irregular attacks on facilities or tankers would see to that. Social turmoil would be likely as various population groups react to the attack and subsequent conflict. In short, there would be no bright line ending the war in the economic, diplomatic and social realms.

To turn to the long-term consequences, Iran would almost certainly remain a major player in its region. Its adjustment to the war and its outcome would have a major role in shaping regional realities. A beaten, humiliated but still defiant Iran with essentially the same political system and approach to the region and the world would be a long-term, growing danger similar to Iraq after the First Gulf War (or Germany after World War I). This would extend beyond the military to include dangers in the other domains.

The first conclusion we should draw from this exercise is that the U.S. government should be prepared for a long and difficult conflict if it ultimately decides it must attack Iran. An attack might end quickly with few complications if Iran acts "rationally." We may not like what that means, however: One "rational" ending for the Iranians would be to accept their losses, declare “victory” because the regime survived, lick their wounds, prepare for indirect retaliation, and resume nuclear activities on a clandestine basis. But a war might not end cleanly, and the U.S. administration could find itself in a messy and protracted conflict. This suggests the need for both an expansive approach to net assessment and deep and broad preparation not just of the military but also of the “home front” and the economy, for Iran may choose to fight on these fronts as well as within its own borders and in the region.

How well prepared is the United States for this kind of fight? This is at least in part a question of national or societal resilience. If all options are on the table, as both Bush and Obama Administration spokesmen have insisted, are preparations for employing all options being made ready? If not, then Iran may decide that some of the options on the table lack credibility.

The second conclusion we should take from this discussion is that, in attacking Iran, we would be trading one set of risks for another. Any option we choose, even choosing not to choose, will have political as well as military-strategic consequences. As hard as it is to know the consequences of war, it is just as hard to know the consequences of a decision to “learn to live” with a nuclear-armed Iran. Both courses are fraught and logically open-ended. Thus the fear of potentially negative consequences from a war should not necessarily rule one out. Winston Churchill, reflecting on British policy before World War II, wrote:

If the circumstances are such as to warrant it, force may be used. And if this be so, it should be used under the conditions which are most favourable. There is no merit in putting off a war for a year if, when it comes, it is a far worse war or one much harder to win.[17]

In any case, if the United States decides to attack Iran it should certainly look before it leaps and prepare itself for a hard landing.

Above all, U.S. leaders should not underestimate the scope or misread the broad nature of war and should therefore organize the U.S. government in advance to prosecute it coherently. In light of how we have fared with whole-of-government approaches and unity-of-command issues in Iraq and Afghanistan, this is clearly a requirement we need to take seriously.

Jeffrey White is a defense fellow at the Washington Institute for Near East Policy and a former senior U.S. intelligence officer.

From: Jeffrey Epstein [jeevacation@gmail.com]
Sent: 9/22/2011 4:48:35 AM
To: Sultan Bin Sulayem [redacted]
Subject: Re: Gps GTX Smart Shoe

thanks , great idea , i really like your friend.

On Thu, Sep 22, 2011 at 12:46 AM, Sultan Bin Sulayem <[redacted]> wrote:

- About GTX
- Products & Services
- Platform
- News
- Contact Us
- Investors
- Press
- Blog

-
- Videos
-
  - Watch Video
  - GTX Corp on YouTube
  - Locimobile

NEWS

Patrick Bertagna Interviewed on Travel Talk Radio with Sandy Dhuyvetter

Patrick Bertagna, founder and co-inventor of the GTX Smart Shoe, joins Sandy to discuss this new invention and what it means to patients and families.

The Executive Producer and Host of TravelTalkMEDIA is Ms. Sandy Dhuyvetter, one of the world's leading travel industry media specialists. Following a successful career as a pioneer in the internet industry and new media in the San Francisco area, Sandy established TravelTalkMEDIA in 2001 to provide radio and web-based, online information to the U.S. and global travel industry.

Listen to the radio interview (MP3)

GTX Corp's Tracking Apps Hit One Million Dowloads

GPS Wolrd - July 12, 2011 - GPS Tracking Apps, from GTX Corp subsidiary LOCiMOBILE, have been downloaded more than one million times by users in 116 countries, and continues to be on the top charts of iTunes and Android marketplace, the company said.

"The GPS Tracking app is the simplest way to stay connected to a child, parent, friend or business associate, quickly and accurately from a Smartphone or Internet-ready device like the iPad, iPod or Android tablet, allowing users to locate people, instantly with one simple touch of a button," said Patrick Bertagna, CEO of GTX Corp. "We also offer it at a price everyone can afford without compromising privacy."

Read the full article

GTX Corp... More'n A Million Served (GPS)

This App has managed to stay quite popular in both iTunes and Android online sites...

SatNews Daily - July 1, 2011 - GTX Corp. (OTCBB: GTXO.OB), a provider of real-time two way GPS Tracking and personal location services (PLS) has announced its LOCiMOBILE subsidiary’s GPS Tracking Apps has managed more than 1 Million downloads with users in 116 countries and continues to be on the top charts of iTunes and Android market place. “The GPS Tracking app is the simplest way to stay connected to a child, parent, friend or business associate, quickly and accurately from a Smartphone or internet ready device like the iPad, iPod or Android tablet, allowing users to locate people, instantly with one simple touch of a button,” said Patrick Bertagna, CEO of GTX Corp. “We also offer it at a price everyone can afford without compromising privacy.”

Read the full article

Professor Andy Carle talks about "Nana" technology and the GPS Smart Shoe™

Radio show called "Wriggling in the Middle", based out of Canton, Ohio and syndicated nationally through FOX radio network.
http://www.whbc.com/Wriggling-In-The-Middle/6636686

For anyone who would like to skip directly to the shoes, go to the link below, scroll down to the show listing (March 28) and fast forward to about the 26-minute mark. The conversation on the shoes lasts about 7 minutes.

Proximity marketing will push location based service revenues to nearly $13 billion over the next few years.

SatNews Daily - March 23, 2011 - GTX Corp (OTCBB: GTXO) and ADAM, Inc. have entered into an exclusive revenue share agreement allowing 123 Chambers of Commerce representing more than 100,000 businesses nationwide to push out proximity alert promotions, using the GTX Corp GPS/PLS Platform and leveraging its growing GPS Tracking Smartphone App user base. Gartner reports that 42 percent of consumers use their phone to check a store location, 31% use it for a mobile promotion, and 17 percent use their phone for the actual purchase.

Read the full article

GTX Corp. Joins with Chambers of Commerce on Location Advertising

GPS World - March 22, 2011 - GTX Corp., which provides two-way GPS Personal Location Services (PLS), and ADAM, Inc., a platform for Hyper Local Mobile Apps for Directories, entered into an exclusive revenue share agreement allowing 123 Chambers of Commerce representing more than 100,000 businesses nationwide to push out proximity alert promotions, using the GTX Corp GPS/PLS Platform and leveraging its growing GPS Tracking Smartphone App user base, GTX Corp. announced.

Read the full article

New Tech Is Helping Families With Special Needs

March 17, 2011 8:52 PM - MIAMI (CBS4) – New technology is making life a little easier for people with special needs and their families.

The GTX Corp. is introducing new shoes, loafers and sneakers, with GPS built into them. CBS technology expert Katie Linendoll said they can really come in handy for families who are taking care of relatives suffering from Alzheimer's disease. With a downloadable app, they can track them using the GPS or get an alert if the person wanders out of a pre-set safe zone.

Read the full story and view the video

Technology for seniors

Great Day Show - CBS KHou.com - Houston - March 23, 2011

Truly groundbreaking tech to change our lives

CBS News - Early Show - March 17, 2011 - The shoe uses GPS and cellular technologies. It gives a family member or a caregiver the option of monitoring real-time from the Internet or on your phone...

Watch the CBS Early Show video

GTX's GPS Tracking Apps For iPhone

Apps allow you to let family, friends know your location

Joel Mathis, Macworld.com - If the federal government tagged millions of iPhone users with GPS tracking devices, the American people—or, at least, Apple devotees—might protest very strongly. But iPhones these days come with GPS installed, and companies make good money furnishing apps that utilize that very feature. On this list: GTX, who offers a pair of $4 GPS apps—GPS Tracking and Tracking—that provide workmanlike solutions for users who want to keep an electronic eye on their loved ones.

Read the full article

Going Gray-Where Technology's Headed - Entering the Gray-Tech Revolution

World Market Media - Brittney Barrett - February 16, 2011

Over the next 20 years, 80 million baby boomers will enter their sixties and seventies in the U.S. alone. In the next 40, the number of senior citizens will double. For the government, this represents a huge financial burden resultant from rising Medicare and

Social Security costs. For industries focused on late-life care and creating products that cater to the aging demographic; however, this population shift represents a major opportunity.

Read the full article

Walk to Remember? A National Academy of Sciences Study Says Yes

February 13, 2011 - In healthy adults, the hippocampus — a part of the brain important to the formation of memories — begins to atrophy around 55 or 60 and even sooner to an even greater degree if one contracts Alzheimer's. Now psychologists are suggesting that the hippocampus can be modestly expanded, and memory improved, by nothing more than regular walking.

Read the full article

GTX's New Patent...Smart Shoe Has Heart In Its Sole (GPS)

Satnews Daily - February 09, 2011 - GTX Corp (OTCBB: GTXO) has a big heart that is manifested in their sole. GTX, known for customizable, 2-way GPS Personal Location Services (PLS) solutions, was granted its ninth patent for their innovative and potentially life saving GPS Smart Shoe technology.

By the year 2050, there will be 16 million adults with Alzheimer's in the U.S. alone. The multi patent GPS Smart Shoe™ will afford millions of caregivers the means to remotely monitor those afflicted with Alzheimer's that become lost due to wondering.

Read the full article

GPS Shoes – Footsteps to the Future…

World Market Media - Brittney Barrett - February 7, 2011

Every 70 seconds, someone in America develops Alzheimer's, according to the Alzheimer's Association 60% will wander away from their homes or care facilities at some point during their affliction with the disease. Worse, it's even more difficult to find a missing senior citizen than a missing child, as fewer people will take note of older person walking alone than they would a small child.

Read the full article

GPS Tracking Technology – How it works

GPS Tracking Apps are available for most smartphones.

Watch this video to learn how GPS Tracking Technology works and what it can do for you.

GPS Tracking Apps installed on over 850,000 smart phones

GPS Tracking Apps by LOCiMOBILE are installed on over 850,000 smart phones in over 106 countries.

LOCiMOBILE is a leader in 2-way GPS Tracking Solutions providing the ability to find your loved ones quickly and easily with one touch of a finger. But don't stop there, get creative with it; track your drivers in real-time, see when your relatives land at the airport… with turn by turn directions, you will never get lost again!

Read the full article

Locimobile GPS Tracker App Now for the iPad

Well it looks like the iPad's next leap is to become a GPS tracker. Locimobile, which makes GPS Tracking Apps for iPhones, iPods and smartphones is now taking on the iPad. From the comfort of your own home and on a much bigger screen, you can keep tabs on your spouse or kids and see in greater detail than before, where they are off too or hanging out. Will the iPad be the cause for the next big celebrity break-up?! Who knows but in the mean time you can use it to keep tabs on your own family for only $4.99

Proximity marketing will push Location Based Services revenues to nearly $13 Billion

Knowing where you are will give you the answer to the "where is" question.

Recent developments in GPS positioning technologies could drive revenues from mobile location-based services to more than $12.7 billion by 2014, according to a new report published by Juniper Research.

Revenues will come from sales of apps through application stores and other channels, but also from mobile advertising tied to those apps. In fact, the Juniper report notes that advertising will likely form an increasing share of Mobile Location Based Services-related revenues over the next five years.

Read the full article

GPS Technology Mentioned In State of the Union Address as Growth Driver

World Market Media - Brittney Barrett - January 26, 2011

“The rules have changed. In a single generation, revolutions in technology have transformed the way we live, work and do business” said President Barack Obama last night, during his second State Of The Union address to the 112th Congress of the United States and 1.3 million Americans watching the speech from their homes.

Read the full article

Patrick Bertagna interview with Bob McCormick from CBS Los Angeles, Money 101

January 17, 2011 - Being an apps developer can pay off handsomely when you fill a need.

Click here to listen to the interview

LBSN – What It Is And Why You Should Care

Marsha Ahrenkiel - January 13, 2011 - Shades of The Island of Dr. Moreau! (hint: Google H.G. Wells) Modern-day mad scientists (let’s call them “software developers”) have been merging social networking concepts with a range of other technologies and rolling out new hybrid beasts that could eventually change your marketing and public relations strategies.

One that we’re keeping a close eye on here is a species known as “location based social networking” (LBSN) – combining short message service (SMS), aspects of gaming, smartphone technologies and GPS capabilities.

Read the full article

GTX Corp - Year in Review 2010

SatMagazine - December 2010 - GTX Corp is in the business of keeping you connected — the Company continues to be at the forefront of the personal location industry and debuting new technologies that impact how you ask the "where is" question.

Read the full article

Future Family: Life In the Digital Age preview.

The Discovery Channel - Nov. 13, 2010 - This patient education program explores how baby boomers the 78 million Americans born in the wake of World War II are embracing technology to better manage increased work and home responsibilities. Future Family discusses the GPS footwear by GTX Corp.

View the show - Part 1

View the show - Part 2

Wireless Technology on Black Friday: Smart Phones Good, PNDs Bad According to WedBush

World Market Media - Tom Copeland - December 1, 2010 -

The biggest holiday shopping days of the year has passed and many investors want to know: How did wireless technology do? According to Scott Sutherland, CFA with Wedbush Securities, the answer is pretty good – depending on which companies you're invested in.

Read the full article

Andrew Carle on Elder Tech Trends

Eldergadget.com - November 5, 2010 - ElderGadget's Michael Goldman starts the series with a conversation with Andrew Carle, an Assistant Professor at George Mason University. Andrew is also an expert on technology development for seniors, and is a consultant for the Nintendo Corp., GTX Corp., and several other companies about how to make their newest gadgets more elder friendly.

Listen to Podcast interview with Andrew Carle

How does a GPS tracking system work?

Patrick Bertagna, GTX Corp. - 10/26/2010 - Global Positioning System (GPS) is a worldwide radio-navigation system formed from the constellation of 24 satellites and their ground stations. The Global Positioning System is mainly funded and controlled by the U.S Department of Defense (DOD). The system was initially designed for the operation of U. S. military. But today, there are also many civil users of GPS across the whole world. The civil users are allowed to use the Standard Positioning Service without any kind of charge or restrictions.

Read the full article

GPS Elder Applications

Eldergadget.com - October 21, 2010 - The rapid evolution of Global Positioning Satellite (GPS) tracking technology is producing new applications of particular interest to seniors, their families, and caregivers. One of the most active companies in this space is GTX Corp. GTX is the company behind the patented GPS Smart Shoe™ , in partnership with footwear manufacturer Aetrex Worldwide. The shoe was developed to provide peace of mind for families with senior-age loved ones suffering from Alzheimer’s and other forms of dementia. Available on the Internet at the GPS Shoe, Aetrex, and Foot.com sites, the shoe should also be available in retail stores some time in 2011, according to GTX Corp. chairman/president Patrick Bertagna.

Read the full story

The "Where" or Your Social Media Network - iCheck-In

World Market Media - Tom Copeland - November 15, 2010 - Checking in is a movement that’s really starting to catch on, and companies are scrambling to develop and release check-in apps and services. GTX Corp committed to being the "better people finder", owns and operates LOCiMOBILE, Inc. which developsGPS Tracking location based social networking (LBSN) mobile applications, today released its 17th App - iCheck-In, the fastest and easiest way to “check-in” and stay connected to everyone in your mobile contact list and your Facebook and Twitter friends.

Read the full story

App News

On Saturday, CBS News broadcasted a segment on The Early Show called “Unique Ways on Keeping Kids Safe on Halloween” in which CNET technology contributor Katie Linendoll showcased a few charming gadgets to help track children while they’re out and about. Naturally, GTX Corp’s iPhone, iPad, Android and Samsung GPS Tracking Apps iLoci2 and GPS Tracking Pro were highlighted for their easy-to-use yet powerful features.

View the show

Patrick Bertagna GTX Corp CEO on the Peggy Smedley Show

Oct. 26, 2010 - wsRadio

Listen to an interview with
Patrick Bertagna, GTX Corp CEO,
on The Peggy Smedley Show

Click here to listen

GPS Smart Shoe ™ Wins 2010 People's Choice Award

LOS ANGELES, Oct. 12, 2010 (GLOBE NEWSWIRE) -

GTX Corp (OTCBB:GTXO - News) has won the prestigious 2010 People's Choice Award for Most Innovative Connected Location Device at the 4th Annual Locations & Beyond Summit this past week.

"We are honored to have won this prestigious award and look forward to continue to bring innovative and game changing technologies that transform how we utilize GPS tracking and stay connected to one another," says Patrick Bertagna, CEO and founder of GTX Corp.

Read the full story

Wall Street Reporter Interview

Audio interview with Patrick Bertanga, CEO, GTX Corp

Click here and then on Audio MP3 button to listen to the interview.

Safety afoot, via GPS, for Alzheimer's patients

USA Weekend - PEGGY J. NOONAN - October 17, 2010

A tiny GPS chip embedded in the sole of the shoe provides continuous tracking ... The GPS Shoe by Aetrex is available from Foot.com and GPSShoe.com now for ...

Read the full story

GTX Corp. (OTCBB: GTXO) Wins 2010 Peoples Choice Award

Tom Copeland - October 11, 2010 - World Market Media

The GPS Smart Shoe™ was nominated for Most Innovative Location Connected Device at the Locations and Beyond Summit that was held last week during the CTIA show and CEO Patrick Bertagna confirmed with us - GTXO had won!

Read the full story

With 675,000 Downloads in 91 Countries GPS Tracking Apps Leader GTX Corp Launches 3 New GPS and LBS Apps

GPS Tracking Apps Keep You Connected to Everyone, Everywhere

LOS ANGELES,CA - Tuesday, September, 28th 2010 - GTX Corp business unit LOCiMOBILE, Inc. is launching a series of GPS and personal location - based "apps" and web services solidifying its leadership position in the mobile LBS market, which mobile carriers are calling "Pure Gold".

Read the full story

Not All Who Wander Are Lost

Donna Fannin - Gather News Technology - October 17, 2010

GPS shoes are coming to a retailer near you. Why in the world would anyone want a GPS tracker in their shoes, you ask? Generally, they don't, if they know about it.

Read the full story

People Choice Tries on GPS Smart Shoe

By Peter Suciu - Kinetic Shift - October 13, 2010

While there are many tracking programs out there for children and even teens, GTX Corp introduced an innovative product aimed at adults suffering from Alzheimer’s disease and other dementias. Many sufferers are actually in good physical condition and thus aren’t confined to a room or even a house. To keep track of loved ones, the company came up with a novel idea – namely putting a tracking device in the footwear.

Read the full story

GTX Corp... Phone Finder (GPS)

Satnews Daily - September 28, 2010

GTX Corp (OTCBB: GTXO.OB) business unit LOCiMOBILE, Inc. is launching a series of GPS and personal location-based “apps” and web services.

The new apps all have a GPS component and are designed to add the “where is” factor to functionality. The Company launched on the Android market place Phone Tracking™ in case you lose or misplace your phone. More than 70 million phones are reported lost or stolen in the US each year, but while the loss of a phone may be annoying, the loss of personal and business data could be devastating.

Read the full story

Gadgets -These Shoes Were Made for Tracking

By Erin Monda - TMCnet Contributor - September 22, 2010

There is no end to the wonderments that shoes can achieve (a certain pair of ruby Mary Janes comes to mind) – and one company is pushing the envelope even further (although not quite as far as Oz).

I’m referring to GTX, a company integrating two-way GPS people-finding technologies into consumer products and applications. The company utilizes the latest in miniaturized global positioning system (GPS) tracking and cellular location technology, enabling subscribers to track in real time the whereabouts of people, pets, or high valued assets through its customizable transceiver module, wireless connectivity gateway, middleware, and viewing portals.

Read the full story

Costs of Alzheimer's will touch 1% of Global GDP in 2010

By World Market Media

The rising need for GTX Corp's technology continues to be influenced by the increasing numbers of elderly and those that are memory impaired, and so the epic battle of technology and illness wages on. ...

Read the full story

Do you know what the Most Innovative Location Device is?

No it's not a compass or an astrolabe. It's not semaphore or a smoke signal. Not an RFID tag or a neon sign or phosphorous flare either.

Give up?

It's the GPS Smart Shoe™ recently mentioned in Forbes Magazine, developed by GTX Corp (OTCBB: GTXO.OB) and licensed to Aetrex Worldwide. Yes, a shoe…well a very smart shoe as it can tell a caregiver the precise location, bearing, history, speed and altitude of an Alzheimer's victim that has eloped or wandered. No small feat – pun intended – to reduce the overwhelming stress on the millions of victim caregivers while potentially saving thousands from injuries and death owing to exposure, accidents and criminal activity. The GPS Shoe also reduces the manpower drain on municipal services; fire, police and welfare agencies often enlisted to locate the mentally ill.

While a Finalist in the Most Innovative Location Device category of the Locations & Beyond Summit and the People's Choice Awards is a wonderful acknowledgment for the years GTXO invested in developing the solution and the promise that Aetrex has made in bringing the Shoe to market… the real winners are those touched by this devastating disease for which there is no cure, but now have a new measure of hope.

'Nanatech': Seniors Stay Independent With Tech Gadgets

Senior Tech - Ashlea Ebeling, 09.15.10

The GPS shoes from GTX (GTXO - news - people) tackle another senior problem--folks who have Alzheimer's who wander and are at risk of getting lost or injured. A GPS device in one of the shoes will alert a caregiver if the wearer leaves a specified area. Don't expect the latest styles from Nike (NKE - news - people) or Steve Madden (shoo - news - people) . The manufacturer is Aetrex Worldwide, an orthodic and medical specialty shoe maker. Roll-out is expected by year's end.

Read the full story

Keeping an eye on Mom and Dad

Remote monitoring technology aims to keep seniors in their houses and out of nursing homes

Over the coming months a raft of new-and-improved remote monitoring devices will hit the market, from GPS shoes that can track the whereabouts of wandering seniors to MedCottages, portable RV-like units equipped with motion and monitoring systems that allow seniors to maintain some independence from the backyard of their adult childrens' homes.

"As we age, this is going to be a growing trend," says Laurie Orlov, a Florida-based expert on so-called "aging-in-place technology" aimed at keeping seniors in their houses and out of nursing homes as long as possible.

"We have to get past the fear and antagonism among the older people who need it the most. I don't think they're that technology-ready, but the boomers, who are their adult children, certainly are."

Motion sensors strategically placed in the three-bedroom home where Howe has lived for 53 years feed information right to her daughter's laptop, detailing when she got out of bed (the Friday we chatted it was 9 a.m.), walked into the bathroom (9:15 a.m.) or hovered at the kitchen table where she keeps her pills (9:30 a.m.)

Even her blood-pressure reading (165/76) is fed to her daughter's computer, along with her daily weigh-in tally, providing a detailed graph which she often takes to her doctor appointments.

The only thing GrandCare can't tell Pierce, because her system doesn't include cameras, is if her mother actually swallowed her pills.

Monitoring and in-home help technologies will be a $20 billion U.S. business in North America by 2020, predicts Orlov, founder of Aging In Place Technology Watch.

Already some baby boomers are able to remotely lock their parents' doors, track calls coming into their homes and even see who is ringing the doorbell, in many cases right from their smart phones. Systems such as QuietCare, WellAWARE, FineThanx and SimplyHome are already fixtures in some U.S. homes and seniors' communities, although Orlov estimates fewer than 10,000 units are in active use because the systems can be so costly.

Next month, Paul Whyte, a Markham dealer of smart-home technology that allows ordinary electronics and appliances to communicate with each other, will unveil the GrandCare system at the Zoomer show in Toronto.

"I call it the invisible caregiver," says Whyte of Cybernetics Systems Inc. "The minute I saw this system I thought, 'There's something that actually makes sense.'

The key, of course, with all these technologies is that the senior be relatively able-bodied and sound of mind — most are of limited value if the senior is suffering from dementia, which is expected to become a major public health issue in the next few decades.

But developers are also working hard on that challenging front.

Sometime later this fall or next spring the first GPS-equipped shoe, the Aetrex Ambulator, will go on sale through www.gpsshoe.com orwww.foot.com.

Originally designed for children by Los Angeles-based GTX Corp., the new shoes are expected to retail for about $250 U.S. They enable caregivers to track those afflicted with dementia or Alzheimer's thanks to GPS and cellular technology that will relay their whereabouts back to a monitoring centre.

"Privacy may be a talking point, but it's not really an issue," says Patrick Bertagna, chairman and CEO of GTX Corp.

MEDCottage creator Dupin expects concerns around privacy will fade quickly as families and health-care systems here and in the U.S. become overwhelmed by aging baby boomers — more than 76 million in the U.S., 10 million in Canada — who start hitting 65 next year.

"I see remote monitoring becoming an integral part of health care as we all age," says Dupin. "One of the issues around aging in place is going to be making trade-offs. Privacy may be something we have to give up."

Susan Pigg focuses on issues about aging and baby boomers. spigg@thestar.ca

Tracking Deal

A downtown L.A. company that creates GPS tracking applications for cell phones has announced a deal to provide its friend-finding apps on Samsung smart phones.

The deal could mean more than 40 million more downloads, which would translate to increased revenue, for GTX Corp.'s application, which is currently available for the iPhone, BlackBerry and Android phones, said GTX Chief Executive Patrick Bertagna.

The LociMobile tracking applications send a GPS signal out to all of a person's cell phone contacts who use the app. Bertagna said the app can be used to meet up with friends or keep tabs on kids.

GTX has also developed a GPS shoe for tracking Alzheimer's patients.

Staff reporter Natalie Jarvey can be reached atnjarvey@labusinessjournal.com or at (323) 549-5225, ext. 230.

Read the full story

Senior Gadgets: GPS Shoe May Offer Peace of Mind to Alzheimer's Caregivers

By Teresa Steinfatt - July 1, 2010 - Safety of loved ones is a top concern for caregivers, especially those caring for persons with Alzheimer's disease.

Memory loss and confusion can set in without warning. For example, a loved one might set out on a walk or errand alone, wander off and not be able to return home safely.

Currently scheduled for retail sale this summer, the Aetrex Ambulator® GPS Shoe by GTX Corp will provide millions of caregivers the means to help easily find those afflicted with Alzheimer's and other forms of dementia who wander and become lost.

Read the full story

Style and Safety Come Together with GPS Shoes For Alzheimer's Care

GTX Corp (OTCBB: GTXO), a provide of customizable, embedded 2-way GPS Personal Location Services (PLS) solutions, is bringing personal GPS tracking solutions to the 5.3 million seniors afflicted with dementia by signing a four year, license agreement with Aetrex Worldwide, Inc. GTX Corp's eight patents for the GPS Shoe cover a GPS transceiver module that is placed within the footwear and transmission of location coordinates to a central monitoring station which disseminates the location data through the use of proprietary software, cellular connectivity, the GTX Corp middleware platform and the secure viewing portal.

Read the full story - World Market Media

Wandering Soles

Aetrex Worldwide Inc. has teamed with GTX Corp. to create the Aetrex Ambulator GPS Shoe, a therapeutic sneaker designed for people with Alzheimer's disease. The shoe comes with a tiny GPS tracker that alerts a caregiver when the wearer has strayed more than a set distance. It then sends the caregiver a Google map link that plots the wearer's location.

Read the full story

GTX And MNX — STAT Trax Critical Medical and Bio-Pharmas

SatNews - June 9, 2010 - GTX Corp (OTCBB: GTXO.OB), a provider in embedded GPS tracking location based services and MNX (Midnite Express), a worldwide specialty courier, have entered into an exclusive three-year contract for GTX to deliver thousands of highly customized, industry-first GPS tracking devices. Additionally, the GTX Corp tracking platform to the shipping company is included in the contract.

Read the full story

Find Friends and Family Mobile Apps

LOCiMOBILE [iPhone & Android]

LOCiMOBILE has a few great GPS tracking apps out at the moment. The two that I would like to feature are the free/lite versions of the software. This app supports up to 6 users (paid version is unlimited) and integrates with Twitter and Facebook. GPS Tracking populates your phone's built-in Google Maps with the locations of people in your private opt-in buddy list. You can let users know where you are or request their location, and you can post your information to your social profiles.

Read the full story

GPS Tracking Apps Website to Track iPad, iPhone, Android, Blackberry Smart Phones

Want to locate all your friends with smart phones (ipad, ipod, iphone, android, blackberry) but you don’t have one? The latest technology from GTX Corp allows you to do just that – www.gpstrackingapps.com high-tech website enables you to locate your family, friends and coworkers (who have downloaded the GPS Tracking App) instantly, in real time, even if you don’t have a smart phone. http andwww.locimobile.com are proud members of the http GTX Corp (OTCBB: GTXO.OB) family of products and services. people locator, people finder, gps tracking, gps tracking app, location based social networking, iphone Friend finder, android, top downloads, gps apps, iPad, blackberry, gps shoe, GTXO, gtxcorp, top apple downloads

Read the full story

Style and Safety Come Together with GPS Shoes For Alzheimer's

Senior Housing News - GTX Corp (OTCBB: GTXO), a provide of customizable, embedded 2-way GPS Personal Location Services (PLS) solutions, is bringing personal GPS tracking solutions to the 5.3 million seniors afflicted with dementia by signing a four year, ...

Read the full story

Keeping track of seniors with Alzheimer's

Rosemary McClure, Special to the Los Angeles Times - May 29, 2010 - The email alert shouted its message: "Missing Person with Alzheimer's. PLEASE HELP." It was sent to Alzheimer's Assn. chapters and to law enforcement officials within hours after an Orange County woman disappeared while on a short trip to visit a friend.

The woman had set out in her car, made a wrong turn and became confused, says her family, who asked that her name not be used to protect her privacy.

Read the full story

Resources and Technology to Help Caregivers Cope

Kirk Johnson - NYTimes.com - May 4, 2010 - One Alzheimer’s wanderer in Arizona had lost much of his memory, but not, apparently, his interest in fashion: he never left the house without a beloved baseball cap on his head. So a trick the family used to keep the man around was to hide his caps.

Search-and-rescue experts who deal with dementia patients also recommend alarms on doors that sound when opened if a proper code is not entered, along with posters or wallpaper images that disguise or conceal doors. Sometimes a simple large, emphatic sign on every door saying “Stop!” will deter a wanderer.

Read the full story

New App craze brings back the 1990’s

World Market Media - April 9, 2010 - Every Portfolio manager I’ve ever known loves to find a sector with wind at it’s back..the early users of the “CrackBerry” knew (Nasdaq: RIMM) was the stock he/she needed to invest in because every person on Wall Street had one. This phenomena doesn’t occur often and RIMM”s are as rare as Australopithecus. I observe the current app craze as the new cycle for lightning quick revenues based on the size of the market itself. Certainly anyone with an iPhone or Android phone has imagined that they could build an app when they got home that night…I know I did.

I can tell you from experience that when Kleiner Perkins doubles the size of its venture fund specific to app’s you know your watching the ship turning in the harbor. This is a unique space with wind at it’s back and certainly the app’s market is a niche to watch, we found this company and had a chance to speak with Patrick Bertagna at GTX Corp (OTCBB:GTXO) its Founder/ Chairman and CEO. He had some interesting comments about how the company has evolved and found some traction with its wholly owned subsidiary LOCiMOBILE Inc. Bertagna commented “With 500 million smart phones entering the market place, I believe we are at the tip of the next disruptive wave. Apps will become as ubiquitous as the device they live on and that makes this new frontier a game changer" Certainly being on the iTunes top ten highest grossing list puts us at the forefront of this coming wave."

Read the full story

World Market Media Announces the Launch of the WMM NanoCap and MicroCap Indices

WEST PALM BEACH, April 19, 2010 (GLOBE NEWSWIRE) – World Market Media, Inc. ("WMM"), a high traffic stock market, news data website providing cutting edge new media products and services to publicly traded companies worldwide, announced today the launch of the WMM NanoCap Index and the WMM MicroCap Index.

Read the full story

GTX Corp. Inks Global Licensing Deal with Aetrex Worldwide

SGI - March 24, 2010 - The four-year, exclusive contract brings Los Angeles-based GTX a step closer to bringing its personal GPS tracking solutions to 5.3 million seniors afflicted with dementia. Aetrex is slated to begin selling the Aetrex Ambulator GPS shoe this summer through its website, www.foot.com, at www.gpsshoe.com and at a select group of assisted living facilities in the U.S.

Read the full story

New Running Shoes Could Include Embedded GPS

GPS-powered trail running shoes may be on the horizon

Michael Barkoviak - March 17, 2010 - GTX Corporation may be one step closer to trail running shoes that have integrated GPS directly into the shoes. GPS use has increased in the cycling and running worlds, as it is used to accurately track time, distance, and speed. There has been discussion of GPS-enabled running shoes in the past, but nothing significant ever materialized.

Read the full story

GPS in your shoe?

Yes GTX Corp. has a GPS shoe that can be worn while a family member is walking or jogging that reports your location to other family members ...

Read the full story

GTX Corporation - Year In Review

GPS “People Tracking” continues to garner both increased opportunity and adoption worldwide — PLS technology has been the focus of our business for the past seven years. GTX Corp., a leader in Personal Location Services, develops and license’s 2-way GPS people finding technologies which seamlessly integrate with consumer products and enterprise applications. GTX Corp uses the latest miniaturized, low power consumption hardware technology in its GPS and cellular location devices and provides a fully customizable back-end portal enabling subscribers to use real time tracking to obtain the whereabouts of people, pets, or valued assets. Through its miniaturized transceiver module, wireless connectivity gateway, smart phone Apps, customizable middleware, and viewing portal, GTX Corp offers a complete end to end solution.

Read the full story

BEAM: Game Plays...

SatMagazine.com : November 2009 - With this issue’s focus on the Latin American and MENA markets, one of the most interesting news items deals with Rio de Janeiro’s win of the 2016 Winter Olympics. Companies who bid for, and win, the broadcasting rights to the 2016 Summer Olympics in Rio de Janeiro are certain to enjoy substantial profits, and Latin American countries and communities are already celebrating this award by the Olympic Committee.

According to GTX Corp., a firm whose base is in the Personal Location Services businesses, Latin America has increased its adoption of Location Based Services by a factor of 10 from 2008 to 2009. Carlos Briceno, the firm’s Vice President of Business Development, states that the category with the highest total spending in South and Central America is in “People Tracking,” which has been the exact focal point of GTX Corp for the past seven years.

Read the full story

GTX Corp Annual Update - Vista Partners
Download the full document

We Know Where You Are

Phoenix, AZ --(www.USEquityNews.com)-- 03/12/2009 - If the above headline sounds a bit spooky, be prepared for things to get a lot spookier in the coming years - but also a lot more useful, valuable and fun. That's because electronic technology has once again taken a turn that could, like the cell phone, affect much of your waking life, either directly or indirectly.

Read the fill story

GTX Corp brings personal location-based services to the masses with Google Maps API Premier Business

Wherever you go, there you are, goes the saying – but others might have a tough time finding you, at least until now. With GTX Corp's Personal Location Services, people can go online and, via an intuitive interface, track the exact location of loved ones, or even their high-value assets. GTX offers miniaturized assisted Global Positioning Satellite (GPS) tracking and cellular location-transmitting technology for consumer products and applications. The company's business model is to deliver solutions to consumers in a wide variety of wearable location devices, from shoes to tiny clip-on devices no larger than a small matchbox, by licensing its core technology to branded consumer product partners.

Read the full story

GPS-Equipped Shoes Keep Track of Wanderers

Tuesday, August 11, 2009 - Caring for a loved one with dementia is worrisome, especially if that person is prone to taking flight. Statistics suggest that 60 percent of people with Alzheimer's disease will get lost at least once, said Andrew Carle, director of George Mason University's senior housing administration program.

Read the full story

Keep Track of Your Kids This Summer

>From GPS to Temporary Tattoos With Contact Info, Keep Your Kid Safe This Summer

ABC News - Good Morning America - July 31, 2009 - Those of you with iPhone know that there are many GPS applications. One of the latest is the Locimobile. Ideal for the 3.0 family (you and your teen need to have the phone). You download the app to your phones, and then your teen lets you check on his or her whereabouts, perhaps in exchange for getting an iPhone in the first place. The Locimobile app allows you to see exactly where your child or children are on a map. You can monitor several kids at one time.

Read the full story

Understanding Dementia And 'Wandering'

NPR - USA - July 14, 2009 - A shoe company, Aetrex Worldwide, and a firm that makes global positioning devices, GTX Corp., have created shoes containing GPS technology for wanderers to ...

GTX in Sports Illustrated

June 29, 2009 - GTX, a technology company, and Aetrex Worldwide have announced plans for shoes containing a GPS chip that will allow family members or saftey personnel to locate anyone wearing the shoes through online tracking software.

Download the article

GPS Tech Review:

Interviews with Leading GPS Innovators

GPS Tech Review is a forum for current news stories and interviews with the leading innovators of GPS-enabled personal location services.

Abductors of Children May Run, But Today Code Amber and SA-Announce Make it Much More Difficult for Them to Hide

Timely missing person's alerts and rich graphics delivered to your phone.

Mandeville, LA (PRWEB) June 25, 2009 --www.CodeAmber.com News Service the nation's leading internet and digital display missing persons alert service, a wholly owned subsidiary of www.GTXCorp.com (GTXO.OB), has expanded its multimillion viewer reach with an additional 2 million www.syn-apps.comsubscribers. SA-Announce, Syn-Apps' notification system, is a feature-rich communication application that works with Cisco Unified Communications Manager to distribute alerts across enterprises such as; NASA, Tiffany & Co and Martha Stewart Living, as well as numerous schools and government offices. The Code Amber alerts will be available to the SA-Announce subscribers and accessible in real-time appearing on their VOIP enabled phones.

Read the full story

GPS shoe to track Alzheimer's patients

A new shoe outfitted with a GPS chip aims to offer peace of mind to Alzheimer's patients and their caregivers.

London, England (CNN) -- June 10, 2009 -- The embedded GPS tracking system will allow the wearer of the shoe to be located instantly online and for their whereabouts to be monitored in real time.

Read the full story

GTX Corp in Sports Intelligence Magazine

May 2009 - GTX Corp., which markets patented two-way GPS Personal Location Services (PLS) solutions, will launch two new applications this summer - expanding its LOCi brand with iLOCi2 and Code Mobile.

Download the Article Here

GTX Corp in Lextech May Newsletter

Download the Full Newsletter Here

GTX Corp on RedChip Real Radio

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GTX in Bottom Line Health

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GTX Corp on RedChip Real Radio

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GTX Corp on CNBC

Watch the video clip

GTX Corp on RedChip Real Radio

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GTX Corp on The Early Show

Watch the video clip

GTX Corp on the Discovery Channel

Watch the video clip

GTX Corp in the Philidelphia Inquirer

Read the article

GTX Corp on KCBS Radio, San Francisco

Listen to the audio clip

GTX Corp on KFWB Radio, Los Angeles

Audio clip 1, Audio clip 2, Audio clip 3

GTX Corp on the KGW News, Portland, OR

Watch the video clip

GTX Corp on the Boston 10 o'clock News

Watch the video clip

GTX Corp in Los Angeles Business Journal

Download the full article

GTX Corp in Pervasive Computing Magazine, April/June 2007

Download the full article

GTX Corp in Budget Travel Magazine, May 2007

Read the full article

GTX Corp in Footwear News Magazine, April 2007

Read the full article

Kids Sneakers That Know Where They Are

Castro Valley Forum - CA, USA - By : Michael Singer : 10/16/07

There is a trend in high-tech that recommends adding location-based services to anything and everything. But it has me pulled between wanting to see really cool gadgets and avoiding a Big Brother-like society.

The latest is a new high-tech tennis shoe coming to the market that lets parents and guardians track the movements of their family using Global Positioning Systems or GPS technology.

Called the "Smart Shoe," the miniature device is inserted in the sole of the low-top sneaker. An antenna that runs up the back of the footwear communicates with satellites and relays a location back to a subscription Web site service for easy viewing. Los Angeles-based GTXC, which makes the devices and the service, said it is hoping to put Smart Shoes in stores by the end of the year. Shoes with the technology could cost between $100 and $200. The tracking service is expected to cost about $20 a month.

Follow That Kid

Today's technology makes it easier for parents to know where their kids are and what they're doing.

By Joe Burris | Baltimore Sun | July 1, 2007

Michelle Smith had been reluctant to buy a cell phone for her 7-year-old daughter, Daysha. Then one day in April, a substitute teacher placed the Radford, Va., girl on the wrong school bus. Instead of being dropped off at her older sister's after-school program as planned, Daysha was sent home - only to find the doors locked.

As she sat on her front porch crying, her mother drove around town, searching frantically for the girl. No one at the school could tell her which bus the girl had been put on.

"Then my next-door neighbor called," said Smith, "and said, 'I have your baby.' "

The scary moment had a happy ending, but Smith didn't want to take a chance on losing her daughter again. So she did what many other parents are doing - she bought her child a cell phone equipped with an electronic device that could keep track of her whereabouts.

Download the full article

Tracking technology hits the ground running.

Wherever you go, there you are. And we know where you are.

By Nancy Francis

GPS technology will soon be at your feet, offering peace of mind to loved ones of Alzheimer's sufferers, people with autism, active preschoolers and others who might wander into harm's way or get lost.

A Los Angeles-based company that sees opportunity in the merging of GPS tracking technology and footwear, has developed several prototypes of GPS tennis shoes.

GTX Corporation is having discussions with various footwear manufactures (including some in Oregon) about licensing its technological designs and connectivity system.

During a recent visit to Portland, GTX Corp CEO Patrick Bertagna showed KGW a prototype of the company's GPS shoe.

Download the full article

Mobile Ways to Keep Track of Your Kids

By Lori Tucker, (WATE) Knoxville, TN -- June 7, 2007

As technology makes our society more mobile, there are more mobile ways to keep track of your loved ones including cell phones, car trackers and even shoes. GPS shoes That's right, an LA company has patented a GPS system in a shoe.

Xplorer Smart Shoes, made by GTX Corp., are able to track the person wearing them in real time or by remote surveillance.

GTX says the shoes work particularly well for: children, people with Alzheimer's disease, outdoor adventures, military, police, fire and public safety workers.

IN THE PIPELINE: Tracking All The Uses For Positioning Chips

By Donna Fuscaldo - DowJones Newswire - May 1, 2007

For Patrick Bertagna, the eureka moment came a few years ago when watching the coverage of the Elizabeth Smart abduction. After spending years helping companies track their products via software, Bertagna decided it was time to do something that mattered.

So the serial entrepreneur, armed with a couple of checks from friends, launched Global Trek Xploration Corp., a Los Angeles-based company that's developing shoes embedded with a global positioning chip. The shoes will enable parents to monitor their children's every movement and caregivers to keep real time tabs on elderly or sick people.

Download the full article

Top-Notch Security

M2M - Specialty Publications - April 6, 2007

M2M technology providers and system integrators often cite efficiency improvements and new revenue opportunities as common indicators of return-on-investment. However, as more and more customers use machine-to-machine applications to collect data, security has not only become a top-notch priority for end users and OEMs (original equipment manufacturers) but also a highly valued part of fostering a positive ROI.

According to IDC Corp., www.idc.com, Framingham, Mass., as devices enabling a mobile workforce continue to shrink in size, the increased likelihood of losing devices, such as laptops, mobile phones, BlackBerrys, has caused growing concern over the sensitive corporate information they contain.

Smart Shoes Get Smarter

M2M - Specialty Publications - April 2, 2007

Smart shoes just got a little smarter. The newest models of GPS-enabled (global positioning system) shoes from Global Trek Xploration Corp. (GTXC), www.gtxcorp.com, Los Angeles, Calif., will now be equipped with wireless and location modules from Enfora Inc.,www.enfora.com, Plano, Texas.

GTXC chose Enfora’s Enabler IIG-A-GPS modules for its robust and accurate platform, company executive say. Eric Stalnaker vice president of business development at GTXC explains, “Enfora and the Enabler II provide us with an integrated approach to software, Internet connectivity, and customization that lets us focus on our product and service offering.”

Wireless Briefs

by Andrew D. Smith | Dallas Morning News | Thursday, March 29, 2007

Few at conference get to soul of GPS shoe

Satellite tracking services were expected to be one of the big attractions at this year's big wireless conference in Orlando, but the satellite shoe seemed to surprise most of the people walking around the convention floor.

Many passers-by Wednesday furrowed their brows or shook their heads at what appeared to be a silly toy for spoiled yuppie joggers. Only a few investigated long enough to realize that the GPS shoe may well be one of the least frivolous prototypes on display among the 1,100 exhibitors. Developers plan to sell the device as a way to track mentally disabled people or seniors who have Alzheimer's disease.

Where would you be without GPS?

Perhaps carrying fewer gadgets: The technology is being added to shoes, MP3 players, dogs

By Carolyn Y. Johnson | Boston Globe | February 19, 2007

This month, GTX Corp. launched a line of Xplorer Smart GPS shoes that transform sneakers into a wearable LoJack system.

ABI Research found that the number of people in North America who subscribe to GPS-enabled location-based services more than doubled between 2005 and 2006, from 1.6 to 3.9 million. The number of subscribers is projected to rocket to 52 million in 2011.

That means companies working in what used to be a niche market have been enjoying explosive growth. Revenues at TomTom NV, a Concord-based maker of personal navigation products, have increased more than 500-fold since 2001, from $2.5 million to an estimated $1.7 billion last year. Garmin's business has exploded into the mainstream, too, and the company ran its first Super Bowl ad this year. Boston-based start-up Skyhook Wireless brings location awareness to any device with WiFi, and announced a major partnership this month with GPS platform maker SiRF.

Xplorer shoes offer advanced personal location services

from Wearable Electronics

January 29, 2007 - We've written several times about the concept of electronically fencing dogs and cats for their safety, or the safety of others. Similarly, as GPS technologies have become commercially viable, of tracking assets and loved ones to ensure their safety. Now personal location services company GTXC Corporation, is set to unveil a line of Xplorer Smart GPS shoes at the World Shoe Association (WSA) in Las Vegas on February 1 which offer a range of new opportunities. Xplorer shoes incorporate a small and robust GPS tracking device which hooks up with GTXC's internet user portal to offer a very compelling array of personal location services.

Integrated GPS Shoes by GTXC

Getoutdoors.com Outdoor Blog - Friday, February 2. 2007

Integrated GPS Shoes by GTXC Though originally made to track patients and kids, we're sure the shoes will be integrated soon with the Nike + Ipod so you can track your run in your personal Google mashup. Or hide it in your wife's purse to see whether she's banging San Francisco's mayor, Gavin Newsom. Or something like that. The system from GTXC has a sophisticated GPS integrated into the shoe, which communicates directly with a satellite, which then relays locations in real-time to their monitoring center and made available via internet or phone. Predetermined geographic areas can also be defined and alerts sent when the person being tracked leaves or enters the area. And don't worry, they already have a product for outdoor activities called the Wearable Caddy.

New Smart GPS Shoes

Manisha Kanetkar - Thursday, 1 February 2007

Keeping track of your loved ones has never been so easy (or so spy-like) with the new Xplorer smart GPS shoes designed by GTXC.

The company boasts the shoes incorporate the smallest, most powerful and robust GPS tracking device currently available. GTXC says they are ideal for caretakers of children or the elderly to easily monitor the location of their charges.

So, for example, they can preset perimeters of safe zones or unsafe zones, and then receive mobile phone alerts if a perimeter is breached by the wearer. This is handled by what the company calls its ‘set-it-and-forget-it' Dual GeoFencing feature.

Shoes with GPS locator Coolest Gadgets

Jan 29, 2007 - GTX Corporation will be unveiling its new line of Xplorer Smart GPS footwear at the beginning of next month in Las Vegas. The Xplorer aims to usher in the next generation of GPS smart shoes by incorporating smaller and yet more powerful GPS chipsets inside the shoe itself to provide a more accurate reading....

GTX Corporation unveils GPS-equipped Xplorer shoes Engadget

Jan 26, 2007 - It seems like Sayo Isaac Daniel has some serious competition coming at him in the GPS shoe market, as GTX Corporation is unveiling its latest geo-tracking footwear at next week's World Shoe Association trade show. The questionably styled Xplorer kicks pack an internal GPS transceiver,...

GPS Shoes keep track of kids

January 25, 2007 - GPS-integrated shoes - now why didn't I think of that? The Xplorer line of Smart GPS shoes from GTX Corp. come with an integrated GPS tracking device which helps parents keep tabs on their children. In addition, parents are able to set up a virtual boundary, where they will be duly noted via SMS should the shoes leave beyond the designated area.

GPS Shoes Let Mommy Know Where You Are

January 25, 2007 - Good news for worried parents. These GTX GPS Xplorer Smart Shoes will let you keep track of your kids no matter where you are. Here's how it works.

Define a "safe" area around your house or school that it's safe for your kids to wander around. When the GPS signal goes outside of the area, an SMS will be sent to your phone alerting you of the situation. Then you're free to call your wife, the police, or Chloe from 24.

The GTX GPS shoes have a small GPS tracking device inside the shoe actually communicates the location to a central location tracking service

ESATO NEWS - Jan 26, 2007 - Xplorer, the next generation of smart GPS shoes, incorporates the smallest, most powerful and robust GPS tracking device on the market today. Drawing on a long history of patented embedded GPS technology for footwear and other consumer products, GTXC has been in development on the Xplorer line for the past three years. The new line advances the state of GPS tracking technology considerably, utilizing several groundbreaking innovations currently in the patent process.

GTX Corp. announces the Xplorer line of Smart GPS shoes

Thu, 25 Jan 2007 - The GTX GPS shoes have a small GPS tracking device inside the shoe actually communicates the location to a central location tracking service. So you could get your kids these GPS sneakers and define an area where it is safe for the kid to wander around. When leaving the defined area an SMS would be sent to your mobile phone notifying you of the situation. GTX calls this feature GeoFencing. The batteries powering the GPS unit inside the shoes last several days.

"With Liberty and Surveillance for All: Person-to-person Surveillance Gets Green Light from Public

Survey research from Boston University graduate students shows that Americans are more willing to engage in surveillance of loved ones than one might expect given our love for independence. Half of Americans are comfortable with being electronically monitored by a loved one for safety or health reasons. Nearly a third 32% say it is likely they will use a tracking device to monitor a loved one in the future."

"The greatest endorsement of P2P surveillance is that 66% of Americans are comfortable being monitored by concerned loved ones in case of emergency. That's an awfully large market waiting to be tapped by companies like GTX Corporation who debuts its first GPS-based tracking shoe for children this week."

Excerpts from recent Boston University Research indicating that two-thirds of Americans are comfortable being electronically monitored by loved ones in case of an emergency

Download the full article

Brave New GPS World

By James Klein, Larta VOX Editor - November 3, 2003

In the future, we won't lose anything. Advances in global positioning system technology allow users to easily pinpoint the location of any object on earth. GPS boards have been reduced to the size of a postage stamp. Soon, we could attach GPS locators to everything we own - cell phones, briefcases, wallets - and even our children.

GPS Shoe to Track Alzheimer's Patients

London, England - June 10, 2009 - A new show outfitted with a GPS chip aims to offer peace of mind to Alzheimer's patients and their caregivers.

Download the full article

GTX Signs Deal With Aertrex Worldwide

June 1, 2009 - GTX signs its first footwear deal for its Personal Location Services product with Aertrex Worldwide, which specializes in orthotic footwear.

Download the full article

Enfora and GTXC Advance Personal Tracking and Location with GPS-enabled Shoe

Plano, Texas - March 27, 2007 - Enfora, Inc., today announced GTX Corporation's (GTXC) adoption of the Enabler® IIG-A-GPS embedded wireless and location module into their latest model of the GTXC Xplorer® GPS Smart Shoe designed to monitor the whereabouts of loved ones.

"Enfora and the Enabler II provide us with an integrated approach to software, Internet connectivity and customization that lets us focus on our product and service offering," said Eric Stalnaker, VP of Business Development at GTXC. "By working with Enfora, we know the Xplorer® A-GPS Smart Shoe is built on a robust and highly accurate platform."
Download the full article

GTXC Wins Praise, Reduces Chip Size

Los Angeles, California, March 5, 2007 - GTXC received a strong, positive reception as a third time exhibitor at the recent World Shoe Association show in Las Vegas, NV. It also won praise from the technology community at the latest 3GSM World Congress in Barcelona, Spain. GTXC continues to build momentum, enhance its intellectual property and provide leadership throughout the embedded GPS footwear space.
Download the full article

New era of "Wearable GPS" capabilities enabled by technological breakthrough.

February 21, 2007, Los Angeles, CA - GTXC, founder of the Personal Location Services category and leader in Miniaturized GPS Technologies, has created a proprietary, "single click" software application used to activate the GPS-2-SMS Dual-GeoFence features that form an integral part of its embedded GPS technology. The recent Multi Dual GeoFence patent application filled in February 2007 is the most current of seven applications filed since the company's founding five years ago, and promises to bring new capabilities and efficiencies to the Wearable GPS industry. The company's first, US Patent 6.788.200 titled GPS Footwear was issued in September 2004.
Download the full article

GTXC unveils new generation of Smart GPS Shoes

Los Angeles, CA, January 25, 2007 - GTX Corp., a dominant world leader in personal location services, will unveil their new Xplorer line of Smart GPS shoes on February 1st, at the World Shoe Association (WSA) in Las Vegas.
Xplorer, the next generation of smart GPS shoes, incorporates the smallest, most powerful and robust GPS tracking device on the market today. Drawing on a long history of patented embedded GPS technology for footwear and other consumer products, GTXC has been in development on

the Xplorer line for the past three years. The new line advances the state of GPS tracking technology considerably, utilizing several ground-breaking innovations currently in the patent process.

Download the full article

GTXC to provide maritime version of personal GPS tracking devices to governmental security agencies and consumers

Los Angeles, California, October 4, 2006 - GTXC (GTX Corporation), the Personal Location Services (PLS) company known worldwide for developing and commercializing miniaturized personal GPS tracking technologies - including ground-breaking shoe-based satellite tracking products - announced today that they have signed a licensing agreement aimed at providing miniaturized, waterproof personal tracking devices to governmental security agencies and consumer maritime enthusiasts.

Download the full article

An Open Letter To GTX Corporation's Investors, Customers And Friends

January 5, 2007 - GTX Corp has received many inquiries this week regarding recent reports that another manufacturer has entered the GPS footwear sector claiming, among other things, that they have patented GPS footwear technology, and that there is a technology called "Quantum Satellite Technology."

GTXC believes that the convergence of high technology with consumer products should be represented to the public in an ethical and honest fashion. GTXC takes issue with the claims made in those recent reports, and believes that they do not paint an accurate and truthful picture. As such, GTXC is taking immediate, strong and active steps to respond to those claims in a responsible way to inform the public and the relevant media about GTXC, its products and technology, and the true status of the following facts.

Download the full article

CEO & President of GTXC - to Address Cornell MBA Class

Los Angeles, California, November 6, 2006 - Patrick Bertagna, CEO and President of GTXC (GTX Corporation), the Personal Location Services (PLS) company known worldwide for developing and commercializing miniaturized personal GPS tracking technologies - including

shoe-based and hand held satellite tracking products - will address the Cornell Business students that are analyzing a case study that was developed over the past year at the university.
Download the full article

GTXC announces newest addition to PERSONAL GPS suite of miniaturized location-finding solutions

Los Angeles, California, June 1, 2006 - GTXC (GTX Corporation), known worldwide for developing and commercializing innovative shoe-based GPS tracking technologies, today announced a downloadable location-finding application for hand held PDAs.
Beginning with PaqTrax™ for the HP iPaq 6515, the newest GTXC application integrates a PDA's embedded GPS abilities with the internet-based GTXC TrackPack™, creating a complete Personal GPS™ tracking and location-finding solution.
Download the full article

Boston University study validates Americans' acceptance of Person-to-Person (P2P) surveillance

Los Angeles, California, March 14, 2006 - GTXC, Inc., maker of miniaturized tracking technologies - including a patented shoe-based GPS location-finding platform - shared in the release of a recent Boston University study which offers proof of strong consumer demand for Person-To-Person (P2P) tracking and surveillance products. Despite increased media attention to governmental eavesdropping and surveillance issues, the study's conclusions contradict privacy advocates and redress recent media sentiments by finding that up to 81% of those surveyed approve the use of P2P surveillance under specific situations, and nearly a third (32%) say they are likely to use a tracking device to monitor a loved one in the future.
Download the full article

GTXC announces world's first GPS location-reporting technology built into footwear

Los Angeles, California, February 10, 2006 - After several years of intensive research and development, GTXC (GTX Corporation) today announced the world's first GPS location-reporting platform built into footwear. Unveiled at the World Shoe Association trade show in Las Vegas, Nevada, the company's patented solution links advanced GPS and cellular miniaturization technology with internet-based monitoring capabilities to provide accurate, real-time location and movement history to a wide range of users. Their shoe-based technology also introduces an innovative platform for delivering a new category of portable, personal consumer-based applications, from exercise monitoring and live real-time gaming to interaction with appliances and other household items.

Download the full article

With Liberty and Surveillance for All: Person-to-person Surveillance Gets Green Light from Public

February 2006 - Excerpts from recent Boston University Research indicating that two-thirds of Americans are comfortable being electronically monitored by loved ones in case of an emergency. Survey research from Boston University graduate students shows that Americans are more willing to engage in surveillance of loved ones than one might expect given our love for independence. Half of Americans are comfortable with being electronically monitored by a loved one for safety or health reasons. Nearly a third 32% say it is likely they will use a tracking device to monitor a loved one in the future."

Download the full article

DailyTech, LLC - Michael Barkoviak - March 17, 2010 - GTX Corporation may be one step closer to trail running shoes that have integrated GPS directly into the shoes. GPS use has increased in the cycling and running worlds, as it is used to accurately track time, distance, and speed. There has been discussion of GPS-enabled running shoes in the past, but nothing significant ever materialized.

Oct 26, 2010

Listen to an interview with GTX Corp CEO, Patrick Bertagna on wsRadio - The Peggy Smiley Show.

Top Grossing iTunes list

GPS Tracking Apps for your smart phone.

Featured Products

Shoes to monitor seniors suffering from dementia.

While GPS tracking can answer the "where" question, the Code Amber Alertag knows the answers to the "who, what and when" questions that first responders to emergencies need to know to provide informed treatment.

2 Way GPS has helped the lives of thousands by guiding emergency services to the precise location of people and pets in need of immediate attention. Getting there quickly however is only the first step. That's why everyone needs a Code Amber Alertag

Code Amber is a wholly owned subsidiary and a member of the family of products and services of GTX Corp

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From: Jeffrey Epstein [jeevacation@gmail.com]
Sent: 9/22/2011 10:19:51 AM
To: Sultan Bin Sulayem [redacted]
Subject: Re: Gps GTX Smart Shoe

we will have dinnner at 8 ,, you can bring your maldives friend or anyone else. (no women). we should spend an hour together just the two of us. today tomorrow:? It is always fun to see you

On Thu, Sep 22, 2011 at 12:46 AM, Sultan Bin Sulayem <[redacted]> wrote:

- About GTX
- Products & Services
- Platform
- News
- Contact Us
- Investors
- Press
- Blog

- Videos
    - Watch Video
    - GTX Corp on YouTube
    - Locimobile

NEWS

Patrick Bertagna Interviewed on Travel Talk Radio with Sandy Dhuyvetter

Patrick Bertagna, founder and co-inventor of the GTX Smart Shoe, joins Sandy to discuss this new invention and what it means to patients and families.

The Executive Producer and Host of TravelTalkMEDIA is Ms. Sandy Dhuyvetter, one of the world's leading travel industry media specialists. Following a successful career as a pioneer in the

internet industry and new media in the San Francisco area, Sandy established TravelTalkMEDIA in 2001 to provide radio and web-based, online information to the U.S. and global travel industry.
Listen to the radio interview (MP3)

GTX Corp's Tracking Apps Hit One Million Dowloads

GPS Wolrd - July 12, 2011 - GPS Tracking Apps, from GTX Corp subsidiary LOCiMOBILE, have been downloaded more than one million times by users in 116 countries, and continues to be on the top charts of iTunes and Android marketplace, the company said.
"The GPS Tracking app is the simplest way to stay connected to a child, parent, friend or business associate, quickly and accurately from a Smartphone or Internet-ready device like the iPad, iPod or Android tablet, allowing users to locate people, instantly with one simple touch of a button," said Patrick Bertagna, CEO of GTX Corp. "We also offer it at a price everyone can afford without compromising privacy."
Read the full article

GTX Corp... More'n A Million Served (GPS)

This App has managed to stay quite popular in both iTunes and Android online sites...

SatNews Daily - July 1, 2011 - GTX Corp. (OTCBB: GTXO.OB), a provider of real-time two way GPS Tracking and personal location services (PLS) has announced its LOCiMOBILE subsidiary's GPS Tracking Apps has managed more than 1 Million downloads with users in 116 countries and continues to be on the top charts of iTunes and Android market place. "The GPS Tracking app is the simplest way to stay connected to a child, parent, friend or business associate, quickly and accurately from a Smartphone or internet ready device like the iPad, iPod or Android tablet, allowing users to locate people, instantly with one simple touch of a button," said Patrick Bertagna, CEO of GTX Corp. "We also offer it at a price everyone can afford without compromising privacy."
Read the full article

Professor Andy Carle talks about "Nana" technology and the GPS Smart Shoe™

Radio show called "Wriggling in the Middle", based out of Canton, Ohio and syndicated nationally through FOX radio network.
http://www.whbc.com/Wriggling-In-The-Middle/6636686

For anyone who would like to skip directly to the shoes, go to the link below, scroll down to the show listing (March 28) and fast forward to about the 26-minute mark. The conversation on the shoes lasts about 7 minutes.

Proximity marketing will push location based service revenues to nearly $13 billion over the next few years.

SatNews Daily - March 23, 2011 - GTX Corp (OTCBB: GTXO) and ADAM, Inc. have entered into an exclusive revenue share agreement allowing 123 Chambers of Commerce representing more than 100,000 businesses nationwide to push out proximity alert promotions, using the GTX Corp GPS/PLS Platform and leveraging its growing GPS Tracking Smartphone App user base. Gartner reports that 42 percent of consumers use their phone to check a store location, 31% use it for a mobile promotion, and 17 percent use their phone for the actual purchase.

Read the full article

GTX Corp. Joins with Chambers of Commerce on Location Advertising

GPS World - March 22, 2011 - GTX Corp., which provides two-way GPS Personal Location Services (PLS), and ADAM, Inc., a platform for Hyper Local Mobile Apps for Directories, entered into an exclusive revenue share agreement allowing 123 Chambers of Commerce representing more than 100,000 businesses nationwide to push out proximity alert promotions, using the GTX Corp GPS/PLS Platform and leveraging its growing GPS Tracking Smartphone App user base, GTX Corp. announced.

Read the full article

New Tech Is Helping Families With Special Needs

March 17, 2011 8:52 PM - MIAMI (CBS4) – New technology is making life a little easier for people with special needs and their families.

The GTX Corp. is introducing new shoes, loafers and sneakers, with GPS built into them. CBS technology expert Katie Linendoll said they can really come in handy for families who are taking care of relatives suffering from Alzheimer's disease. With a downloadable app, they can track them using the GPS or get an alert if the person wanders out of a pre-set safe zone.

Read the full story and view the video

Technology for seniors

Great Day Show - CBS KHou.com - Houston - March 23, 2011

Truly groundbreaking tech to change our lives

CBS News - Early Show - March 17, 2011 - The shoe uses GPS and cellular technologies. It gives a family member or a caregiver the option of monitoring real-time from the Internet or on your phone...

Watch the CBS Early Show video

GTX's GPS Tracking Apps For iPhone

Apps allow you to let family, friends know your location

Joel Mathis, Macworld.com - If the federal government tagged millions of iPhone users with GPS tracking devices, the American people—or, at least, Apple devotees—might protest very strongly. But iPhones these days come with GPS installed, and companies make good money furnishing apps that utilize that very feature. On this list: GTX, who offers a pair of $4 GPS apps—GPS Tracking and Tracking—that provide workmanlike solutions for users who want to keep an electronic eye on their loved ones.

Read the full article

Going Gray-Where Technology's Headed - Entering the Gray-Tech Revolution

World Market Media - Brittney Barrett - February 16, 2011

Over the next 20 years, 80 million baby boomers will enter their sixties and seventies in the U.S. alone. In the next 40, the number of senior citizens will double. For the government, this represents a huge financial burden resultant from rising Medicare and

Social Security costs. For industries focused on late-life care and creating products that cater to the aging demographic; however, this population shift represents a major opportunity.

Read the full article

Walk to Remember? A National Academy of Sciences Study Says Yes

February 13, 2011 - In healthy adults, the hippocampus — a part of the brain important to the formation of memories — begins to atrophy around 55 or 60 and even sooner to an even greater degree if one contracts Alzheimer's. Now psychologists are suggesting that the hippocampus can be modestly expanded, and memory improved, by nothing more than regular walking.

Read the full article

GTX's New Patent...Smart Shoe Has Heart In Its Sole (GPS)

Satnews Daily - February 09, 2011 - GTX Corp (OTCBB: GTXO) has a big heart that is manifested in their sole. GTX, known for customizable, 2-way GPS Personal Location Services (PLS) solutions, was granted its ninth patent for their innovative and potentially life saving GPS Smart Shoe technology.

By the year 2050, there will be 16 million adults with Alzheimer's in the U.S. alone. The multi patent GPS Smart Shoe™ will afford millions of caregivers the means to remotely monitor those afflicted with Alzheimer's that become lost due to wondering.

Read the full article

GPS Shoes – Footsteps to the Future…

World Market Media - Brittney Barrett - February 7, 2011

Every 70 seconds, someone in America develops Alzheimer's, according to the Alzheimer's Association 60% will wander away from their homes or care facilities at some point during their affliction with the disease. Worse, it's even more difficult to find a missing senior citizen than a missing child, as fewer people will take note of older person walking alone than they would a small child.

Read the full article

GPS Tracking Technology – How it works

GPS Tracking Apps are available for most smartphones.

Watch this video to learn how GPS Tracking Technology works and what it can do for you.

GPS Tracking Apps installed on over 850,000 smart phones

GPS Tracking Apps by LOCiMOBILE are installed on over 850,000 smart phones in over 106 countries.

LOCiMOBILE is a leader in 2-way GPS Tracking Solutions providing the ability to find your loved ones quickly and easily with one touch of a finger. But don't stop there, get creative with it; track your drivers in real-time, see when your relatives land at the airport… with turn by turn directions, you will never get lost again!

Read the full article

Locimobile GPS Tracker App Now for the iPad

Well it looks like the iPad's next leap is to become a GPS tracker. Locimobile, which makes GPS Tracking Apps for iPhones, iPods and smartphones is now taking on the iPad. From the comfort of your own home and on a much bigger screen, you can keep tabs on your spouse or kids and see in greater detail than before, where they are off too or hanging out. Will the iPad be the cause for the next big celebrity break-up?! Who knows but in the mean time you can use it to keep tabs on your own family for only $4.99

Proximity marketing will push Location Based Services revenues to nearly $13 Billion

Knowing where you are will give you the answer to the "where is" question.

Recent developments in GPS positioning technologies could drive revenues from mobile location-based services to more than $12.7 billion by 2014, according to a new report published by Juniper Research.

Revenues will come from sales of apps through application stores and other channels, but also from mobile advertising tied to those apps. In fact, the Juniper report notes that advertising will likely form an increasing share of Mobile Location Based Services-related revenues over the next five years.

Read the full article

GPS Technology Mentioned In State of the Union Address as Growth Driver

World Market Media - Brittney Barrett - January 26, 2011

“The rules have changed. In a single generation, revolutions in technology have transformed the way we live, work and do business” said President Barack Obama last night, during his second State Of The Union address to the 112th Congress of the United States and 1.3 million Americans watching the speech from their homes.

Read the full article

Patrick Bertagna interview with Bob McCormick from CBS Los Angeles, Money 101

January 17, 2011 - Being an apps developer can pay off handsomely when you fill a need.

Click here to listen to the interview

LBSN – What It Is And Why You Should Care

Marsha Ahrenkiel - January 13, 2011 - Shades of The Island of Dr. Moreau! (hint: Google H.G. Wells) Modern-day mad scientists (let’s call them “software developers”) have been merging social networking concepts with a range of other technologies and rolling out new hybrid beasts that could eventually change your marketing and public relations strategies.

One that we’re keeping a close eye on here is a species known as “location based social networking” (LBSN) – combining short message service (SMS), aspects of gaming, smartphone technologies and GPS capabilities.

Read the full article

GTX Corp - Year in Review 2010

SatMagazine - December 2010 - GTX Corp is in the business of keeping you connected — the Company continues to be at the forefront of the personal location industry and debuting new technologies that impact how you ask the "where is" question.

Read the full article

Future Family: Life In the Digital Age preview.

The Discovery Channel - Nov. 13, 2010 - This patient education program explores how baby boomers the 78 million Americans born in the wake of World War II are embracing technology to better manage increased work and home responsibilities. Future Family discusses the GPS footwear by GTX Corp.

View the show - Part 1

View the show - Part 2

Wireless Technology on Black Friday: Smart Phones Good, PNDs Bad According to WedBush

World Market Media - Tom Copeland - December 1, 2010 - The biggest holiday shopping days of the year has passed and many investors want to know: How did wireless technology do? According to Scott Sutherland, CFA with Wedbush Securities, the answer is pretty good – depending on which companies you're invested in.

Read the full article

Andrew Carle on Elder Tech Trends

Eldergadget.com - November 5, 2010 - ElderGadget's Michael Goldman starts the series with a conversation with Andrew Carle, an Assistant Professor at George Mason University. Andrew is also an expert on technology development for seniors, and is a consultant for the Nintendo Corp., GTX Corp., and several other companies about how to make their newest gadgets more elder friendly.

Listen to Podcast interview with Andrew Carle

How does a GPS tracking system work?

Patrick Bertagna, GTX Corp. - 10/26/2010 - Global Positioning System (GPS) is a worldwide radio-navigation system formed from the constellation of 24 satellites and their ground stations. The Global Positioning System is mainly funded and controlled by the U.S Department of Defense (DOD). The system was initially designed for the operation of U. S. military. But today, there are also many civil users of GPS across the whole world. The civil users are allowed to use the Standard Positioning Service without any kind of charge or restrictions.

Read the full article

GPS Elder Applications

Eldergadget.com - October 21, 2010 - The rapid evolution of Global Positioning Satellite (GPS) tracking technology is producing new applications of particular interest to seniors, their families, and caregivers. One of the most active companies in this space is GTX Corp. GTX is the company behind the patented GPS Smart Shoe™ , in partnership with footwear manufacturer Aetrex Worldwide. The shoe was developed to provide peace of mind for families with senior-age loved ones suffering from Alzheimer's and other forms of dementia. Available on the Internet at the GPS Shoe, Aetrex, and Foot.com sites, the shoe should also be available in retail stores some time in 2011, according to GTX Corp. chairman/president Patrick Bertagna.

Read the full story

The "Where" or Your Social Media Network - iCheck-In

World Market Media - Tom Copeland - November 15, 2010 - Checking in is a movement that's really starting to catch on, and companies are scrambling to develop and release check-in apps and services. GTX Corp committed to being the "better people finder", owns and operates LOCiMOBILE, Inc. which developsGPS Tracking location based social networking (LBSN) mobile applications, today released its 17th App - iCheck-In, the fastest and easiest way to "check-in" and stay connected to everyone in your mobile contact list and your Facebook and Twitter friends.

Read the full story

App News

On Saturday, CBS News broadcasted a segment on The Early Show called "Unique Ways on Keeping Kids Safe on Halloween" in which CNET technology contributor Katie Linendoll showcased a few charming gadgets to help track children while they're out and about. Naturally, GTX Corp's iPhone, iPad, Android and Samsung GPS Tracking Apps iLoci2 and GPS Tracking Pro were highlighted for their easy-to-use yet powerful features.

View the show

Patrick Bertagna GTX Corp CEO on the Peggy Smedley Show

Oct. 26, 2010 - wsRadio

Listen to an interview with
Patrick Bertagna, GTX Corp CEO,
on The Peggy Smedley Show

Click here to listen

GPS Smart Shoe ™ Wins 2010 People's Choice Award

LOS ANGELES, Oct. 12, 2010 (GLOBE NEWSWIRE) -

GTX Corp (OTCBB:GTXO - News) has won the prestigious 2010 People's Choice Award for Most Innovative Connected Location Device at the 4th Annual Locations & Beyond Summit this past week.

"We are honored to have won this prestigious award and look forward to continue to bring innovative and game changing technologies that transform how we utilize GPS tracking and stay connected to one another," says Patrick Bertagna, CEO and founder of GTX Corp.

Read the full story

Wall Street Reporter Interview

Audio interview with Patrick Bertanga, CEO, GTX Corp

Click here and then on Audio MP3 button to listen to the interview.

Safety afoot, via GPS, for Alzheimer's patients

USA Weekend - PEGGY J. NOONAN - October 17, 2010

A tiny GPS chip embedded in the sole of the shoe provides continuous tracking ... The GPS Shoe by Aetrex is available from Foot.com and GPSShoe.com now for ...

Read the full story

GTX Corp. (OTCBB: GTXO) Wins 2010 Peoples Choice Award

Tom Copeland - October 11, 2010 - World Market Media

The GPS Smart Shoe™ was nominated for Most Innovative Location Connected Device at the Locations and Beyond Summit that was held last week during the CTIA show and CEO Patrick Bertagna confirmed with us - GTXO had won!

Read the full story

With 675,000 Downloads in 91 Countries GPS Tracking Apps Leader GTX Corp Launches 3 New GPS and LBS Apps

GPS Tracking Apps Keep You Connected to Everyone, Everywhere

LOS ANGELES,CA - Tuesday, September, 28th 2010 - GTX Corp business unit LOCiMOBILE, Inc. is launching a series of GPS and personal location - based "apps" and web services solidifying its leadership position in the mobile LBS market, which mobile carriers are calling "Pure Gold".

Read the full story

Not All Who Wander Are Lost

Donna Fannin - Gather News Technology - October 17, 2010

GPS shoes are coming to a retailer near you. Why in the world would anyone want a GPS tracker in their shoes, you ask? Generally, they don't, if they know about it.

Read the full story

People Choice Tries on GPS Smart Shoe

By Peter Suciu - Kinetic Shift - October 13, 2010

While there are many tracking programs out there for children and even teens, GTX Corp introduced an innovative product aimed at adults suffering from Alzheimer's disease and other dementias. Many sufferers are actually in good physical condition and thus aren't confined to a room or even a house. To keep track of loved ones, the company came up with a novel idea – namely putting a tracking device in the footwear.

Read the full story

GTX Corp... Phone Finder (GPS)

Satnews Daily - September 28, 2010

GTX Corp (OTCBB: GTXO.OB) business unit LOCiMOBILE, Inc. is launching a series of GPS and personal location-based "apps" and web services.

The new apps all have a GPS component and are designed to add the "where is" factor to functionality. The Company launched on the Android market place Phone Tracking™ in case you lose or misplace your phone. More than 70 million phones are reported lost or stolen in the US each year, but while the loss of a phone may be annoying, the loss of personal and business data could be devastating.

Read the full story

Gadgets -These Shoes Were Made for Tracking

By Erin Monda - TMCnet Contributor - September 22, 2010

There is no end to the wonderments that shoes can achieve (a certain pair of ruby Mary Janes comes to mind) – and one company is pushing the envelope even further (although not quite as far as Oz).

I'm referring to GTX, a company integrating two-way GPS people-finding technologies into consumer products and applications. The company utilizes the latest in miniaturized global positioning system (GPS) tracking and cellular location technology, enabling subscribers to track in real time the whereabouts of people, pets, or high valued assets through its customizable transceiver module, wireless connectivity gateway, middleware, and viewing portals.

Read the full story

Costs of Alzheimer's will touch 1% of Global GDP in 2010

By World Market Media

The rising need for GTX Corp's technology continues to be influenced by the increasing numbers of elderly and those that are memory impaired, and so the epic battle of technology and illness wages on. ...

Read the full story

Do you know what the Most Innovative Location Device is?

No it’s not a compass or an astrolabe. It’s not semaphore or a smoke signal. Not an RFID tag or a neon sign or phosphorous flare either.

Give up?

It’s the GPS Smart Shoe™ recently mentioned in Forbes Magazine, developed by GTX Corp (OTCBB: GTXO.OB) and licensed to Aetrex Worldwide. Yes, a shoe…well a very smart shoe as it can tell a caregiver the precise location, bearing, history, speed and altitude of an Alzheimer’s victim that has eloped or wandered. No small feat – pun intended – to reduce the overwhelming stress on the millions of victim caregivers while potentially saving thousands from injuries and death owing to exposure, accidents and criminal activity. The GPS Shoe also reduces the manpower drain on municipal services; fire, police and welfare agencies often enlisted to locate the mentally ill.

While a Finalist in the Most Innovative Location Device category of the Locations & Beyond Summit and the People’s Choice Awards is a wonderful acknowledgment for the years GTXO invested in developing the solution and the promise that Aetrex has made in bringing the Shoe to market… the real winners are those touched by this devastating disease for which there is no cure, but now have a new measure of hope.

'Nanatech': Seniors Stay Independent With Tech Gadgets

Senior Tech - Ashlea Ebeling, 09.15.10

The GPS shoes from GTX (GTXO - news - people) tackle another senior problem--folks who have Alzheimer's who wander and are at risk of getting lost or injured. A GPS device in one of the shoes will alert a caregiver if the wearer leaves a specified area. Don't expect the latest styles from Nike (NKE - news - people) or Steve Madden (shoo - news - people) . The manufacturer is Aetrex Worldwide, an orthodic and medical specialty shoe maker. Roll-out is expected by year's end.

Read the full story

Keeping an eye on Mom and Dad

Remote monitoring technology aims to keep seniors in their houses and out of nursing homes

Over the coming months a raft of new-and-improved remote monitoring devices will hit the market, from GPS shoes that can track the whereabouts of wandering seniors to MedCottages, portable RV-like units equipped with motion and monitoring systems that allow seniors to maintain some independence from the backyard of their adult childrens' homes.

"As we age, this is going to be a growing trend," says Laurie Orlov, a Florida-based expert on so-called "aging-in-place technology" aimed at keeping seniors in their houses and out of nursing homes as long as possible.

"We have to get past the fear and antagonism among the older people who need it the most. I don't think they're that technology-ready, but the boomers, who are their adult children, certainly are."

Motion sensors strategically placed in the three-bedroom home where Howe has lived for 53 years feed information right to her daughter's laptop, detailing when she got out of bed (the Friday we chatted it was 9 a.m.), walked into the bathroom (9:15 a.m.) or hovered at the kitchen table where she keeps her pills (9:30 a.m.)

Even her blood-pressure reading (165/76) is fed to her daughter's computer, along with her daily weigh-in tally, providing a detailed graph which she often takes to her doctor appointments.

The only thing GrandCare can't tell Pierce, because her system doesn't include cameras, is if her mother actually swallowed her pills.

Monitoring and in-home help technologies will be a $20 billion U.S. business in North America by 2020, predicts Orlov, founder of Aging In Place Technology Watch.

Already some baby boomers are able to remotely lock their parents' doors, track calls coming into their homes and even see who is ringing the doorbell, in many cases right from their smart phones. Systems such as QuietCare, WellAWARE, FineThanx and SimplyHome are already fixtures in some U.S. homes and seniors' communities, although Orlov estimates fewer than 10,000 units are in active use because the systems can be so costly.

Next month, Paul Whyte, a Markham dealer of smart-home technology that allows ordinary electronics and appliances to communicate with each other, will unveil the GrandCare system at the Zoomer show in Toronto.

"I call it the invisible caregiver," says Whyte of Cybernetics Systems Inc. "The minute I saw this system I thought, 'There's something that actually makes sense.'

The key, of course, with all these technologies is that the senior be relatively able-bodied and sound of mind — most are of limited value if the senior is suffering from dementia, which is expected to become a major public health issue in the next few decades.

But developers are also working hard on that challenging front.

Sometime later this fall or next spring the first GPS-equipped shoe, the Aetrex Ambulator, will go on sale through www.gpsshoe.com orwww.foot.com.

Originally designed for children by Los Angeles-based GTX Corp., the new shoes are expected to retail for about $250 U.S. They enable caregivers to track those afflicted with dementia or Alzheimer's thanks to GPS and cellular technology that will relay their whereabouts back to a monitoring centre.

"Privacy may be a talking point, but it's not really an issue," says Patrick Bertagna, chairman and CEO of GTX Corp.

MEDCottage creator Dupin expects concerns around privacy will fade quickly as families and health-care systems here and in the U.S. become overwhelmed by aging baby boomers — more than 76 million in the U.S., 10 million in Canada — who start hitting 65 next year.

"I see remote monitoring becoming an integral part of health care as we all age," says Dupin. "One of the issues around aging in place is going to be making trade-offs. Privacy may be something we have to give up."

Susan Pigg focuses on issues about aging and baby boomers. spigg@thestar.ca

Tracking Deal

A downtown L.A. company that creates GPS tracking applications for cell phones has announced a deal to provide its friend-finding apps on Samsung smart phones.

The deal could mean more than 40 million more downloads, which would translate to increased revenue, for GTX Corp.'s application, which is currently available for the iPhone, BlackBerry and Android phones, said GTX Chief Executive Patrick Bertagna.

The LociMobile tracking applications send a GPS signal out to all of a person's cell phone contacts who use the app. Bertagna said the app can be used to meet up with friends or keep tabs on kids.

GTX has also developed a GPS shoe for tracking Alzheimer's patients.

Staff reporter Natalie Jarvey can be reached atnjarvey@labusinessjournal.com or at (323) 549-5225, ext. 230.

Read the full story

Senior Gadgets: GPS Shoe May Offer Peace of Mind to Alzheimer's Caregivers

By Teresa Steinfatt - July 1, 2010 - Safety of loved ones is a top concern for caregivers, especially those caring for persons with Alzheimer's disease.

Memory loss and confusion can set in without warning. For example, a loved one might set out on a walk or errand alone, wander off and not be able to return home safely.

Currently scheduled for retail sale this summer, the Aetrex Ambulator® GPS Shoe by GTX Corp will provide millions of caregivers the means to help easily find those afflicted with Alzheimer's and other forms of dementia who wander and become lost.

Read the full story

Style and Safety Come Together with GPS Shoes For Alzheimer's Care

GTX Corp (OTCBB: GTXO), a provide of customizable, embedded 2-way GPS Personal Location Services (PLS) solutions, is bringing personal GPS tracking solutions to the 5.3 million seniors afflicted with dementia by signing a four year, license agreement with Aetrex Worldwide, Inc. GTX Corp's eight patents for the GPS Shoe cover a GPS transceiver module that is placed within the footwear and transmission of location coordinates to a central monitoring station which disseminates the location data through the use of proprietary software, cellular connectivity, the GTX Corp middleware platform and the secure viewing portal.

Read the full story - World Market Media

Wandering Soles

Aetrex Worldwide Inc. has teamed with GTX Corp. to create the Aetrex Ambulator GPS Shoe, a therapeutic sneaker designed for people with Alzheimer's disease. The shoe comes with a tiny GPS tracker that alerts a caregiver when the wearer has strayed more than a set distance. It then sends the caregiver a Google map link that plots the wearer's location.

Read the full story

GTX And MNX — STAT Trax Critical Medical and Bio-Pharmas

SatNews - June 9, 2010 - GTX Corp (OTCBB: GTXO.OB), a provider in embedded GPS tracking location based services and MNX (Midnite Express), a worldwide specialty courier, have entered into an exclusive three-year contract for GTX to deliver thousands of highly customized, industry-first GPS tracking devices. Additionally, the GTX Corp tracking platform to the shipping company is included in the contract.

Read the full story

Find Friends and Family Mobile Apps

LOCiMOBILE [iPhone & Android]

LOCiMOBILE has a few great GPS tracking apps out at the moment. The two that I would like to feature are the free/lite versions of the software. This app supports up to 6 users (paid version is unlimited) and integrates with Twitter and Facebook. GPS Tracking populates your phone's built-in Google Maps with the locations of people in your private opt-in buddy list. You can let users know where you are or request their location, and you can post your information to your social profiles.

Read the full story

GPS Tracking Apps Website to Track iPad, iPhone, Android, Blackberry Smart Phones

Want to locate all your friends with smart phones (ipad, ipod, iphone, android, blackberry) but you don’t have one? The latest technology from GTX Corp allows you to do just that – www.gpstrackingapps.com high-tech website enables you to locate your family, friends and coworkers (who have downloaded the GPS Tracking App) instantly, in real time, even if you don’t have a smart phone. http andwww.locimobile.com are proud members of the http GTX Corp (OTCBB: GTXO.OB) family of products and services. people locator, people finder, gps tracking, gps tracking app, location based social networking, iphone Friend finder, android, top downloads, gps apps, iPad, blackberry, gps shoe, GTXO, gtxcorp, top apple downloads

Read the full story

Style and Safety Come Together with GPS Shoes For Alzheimer's

Senior Housing News - GTX Corp (OTCBB: GTXO), a provide of customizable, embedded 2-way GPS Personal Location Services (PLS) solutions, is bringing personal GPS tracking solutions to the 5.3 million seniors afflicted with dementia by signing a four year, ...

Read the full story

Keeping track of seniors with Alzheimer's

Rosemary McClure, Special to the Los Angeles Times - May 29, 2010 - The email alert shouted its message: "Missing Person with Alzheimer's. PLEASE HELP." It was sent to Alzheimer's Assn. chapters and to law enforcement officials within hours after an Orange County woman disappeared while on a short trip to visit a friend.

The woman had set out in her car, made a wrong turn and became confused, says her family, who asked that her name not be used to protect her privacy.

Read the full story

Resources and Technology to Help Caregivers Cope

Kirk Johnson - NYTimes.com - May 4, 2010 - One Alzheimer’s wanderer in Arizona had lost much of his memory, but not, apparently, his interest in fashion: he never left the house without a beloved baseball cap on his head. So a trick the family used to keep the man around was to hide his caps.

Search-and-rescue experts who deal with dementia patients also recommend alarms on doors that sound when opened if a proper code is not entered, along with posters or wallpaper images that disguise or conceal doors. Sometimes a simple large, emphatic sign on every door saying “Stop!” will deter a wanderer.

Read the full story

New App craze brings back the 1990’s

World Market Media - April 9, 2010 - Every Portfolio manager I’ve ever known loves to find a sector with wind at it’s back..the early users of the “CrackBerry” knew (Nasdaq: RIMM) was the stock he/she needed to invest in because every person on Wall Street had one. This phenomena doesn’t occur often and RIMM”s are as rare as Australopithecus. I observe the current app craze as the new cycle for lightning quick revenues based on the size of the market itself. Certainly anyone with an iPhone or Android phone has imagined that they could build an app when they got home that night…I know I did.

I can tell you from experience that when Kleiner Perkins doubles the size of its venture fund specific to app’s you know your watching the ship turning in the harbor. This is a unique space with wind at it’s back and certainly the app’s market is a niche to watch, we found this company and had a chance to speak with Patrick Bertagna at GTX Corp (OTCBB:GTXO) its Founder/ Chairman and CEO. He had some interesting comments about how the company has evolved and found some traction with its wholly owned subsidiary LOCiMOBILE Inc. Bertagna commented “With 500 million smart phones entering the market place, I believe we are at the tip of the next disruptive wave. Apps will become as ubiquitous as the device they live on and that makes this new frontier a game changer" Certainly being on the iTunes top ten highest grossing list puts us at the forefront of this coming wave."

Read the full story

World Market Media Announces the Launch of the WMM NanoCap and MicroCap Indices

WEST PALM BEACH, April 19, 2010 (GLOBE NEWSWIRE) – World Market Media, Inc. ("WMM"), a high traffic stock market, news data website providing cutting edge new media products and services to publicly traded companies worldwide, announced today the launch of the WMM NanoCap Index and the WMM MicroCap Index.

Read the full story

GTX Corp. Inks Global Licensing Deal with Aetrex Worldwide

SGI - March 24, 2010 - The four-year, exclusive contract brings Los Angeles-based GTX a step closer to bringing its personal GPS tracking solutions to 5.3 million seniors afflicted with dementia. Aetrex is slated to begin selling the Aetrex Ambulator GPS shoe this summer through its website, www.foot.com, at www.gpsshoe.com and at a select group of assisted living facilities in the U.S.

Read the full story

New Running Shoes Could Include Embedded GPS

GPS-powered trail running shoes may be on the horizon

Michael Barkoviak - March 17, 2010 - GTX Corporation may be one step closer to trail running shoes that have integrated GPS directly into the shoes. GPS use has increased in the cycling and running worlds, as it is used to accurately track time, distance, and speed. There has been discussion of GPS-enabled running shoes in the past, but nothing significant ever materialized.

Read the full story

GPS in your shoe?

Yes GTX Corp. has a GPS shoe that can be worn while a family member is walking or jogging that reports your location to other family members ...

Read the full story

GTX Corporation - Year In Review

GPS "People Tracking" continues to garner both increased opportunity and adoption worldwide — PLS technology has been the focus of our business for the past seven years. GTX Corp., a leader in Personal Location Services, develops and license's 2-way GPS people finding technologies which seamlessly integrate with consumer products and enterprise applications. GTX Corp uses the latest miniaturized, low power consumption hardware technology in its GPS and cellular location devices and provides a fully customizable back-end portal enabling subscribers to use real time tracking to obtain the whereabouts of people, pets, or valued assets. Through its miniaturized transceiver module, wireless connectivity gateway, smart phone Apps, customizable middleware, and viewing portal, GTX Corp offers a complete end to end solution.

Read the full story

BEAM: Game Plays...

SatMagazine.com : November 2009 - With this issue's focus on the Latin American and MENA markets, one of the most interesting news items deals with Rio de Janeiro's win of the 2016 Winter Olympics. Companies who bid for, and win, the broadcasting rights to the 2016 Summer Olympics in Rio de Janeiro are certain to enjoy substantial profits, and Latin American countries and communities are already celebrating this award by the Olympic Committee.

According to GTX Corp., a firm whose base is in the Personal Location Services businesses, Latin America has increased its adoption of Location Based Services by a factor of 10 from 2008 to 2009. Carlos Briceno, the firm's Vice President of Business Development, states that the category with the highest total spending in South and Central America is in "People Tracking," which has been the exact focal point of GTX Corp for the past seven years.

Read the full story

GTX Corp Annual Update - Vista Partners
Download the full document

We Know Where You Are

Phoenix, AZ --(www.USEquityNews.com)-- 03/12/2009 - If the above headline sounds a bit spooky, be prepared for things to get a lot spookier in the coming years - but also a lot more useful, valuable and fun. That's because electronic technology has once again taken a turn that could, like the cell phone, affect much of your waking life, either directly or indirectly.

Read the fill story

GTX Corp brings personal location-based services to the masses with Google Maps API Premier Business

Wherever you go, there you are, goes the saying – but others might have a tough time finding you, at least until now. With GTX Corp's Personal Location Services, people can go online and, via an intuitive interface, track the exact location of loved ones, or even their high-value assets. GTX offers miniaturized assisted Global Positioning Satellite (GPS) tracking and cellular location-transmitting technology for consumer products and applications. The company's business model is to deliver solutions to consumers in a wide variety of wearable location devices, from shoes to tiny clip-on devices no larger than a small matchbox, by licensing its core technology to branded consumer product partners.

Read the full story

GPS-Equipped Shoes Keep Track of Wanderers

Tuesday, August 11, 2009 - Caring for a loved one with dementia is worrisome, especially if that person is prone to taking flight. Statistics suggest that 60 percent of people with Alzheimer's disease will get lost at least once, said Andrew Carle, director of George Mason University's senior housing administration program.

Read the full story

Keep Track of Your Kids This Summer

>From GPS to Temporary Tattoos With Contact Info, Keep Your Kid Safe This Summer

ABC News - Good Morning America - July 31, 2009 - Those of you with iPhone know that there are many GPS applications. One of the latest is the Locimobile. Ideal for the 3.0 family (you and your teen need to have the phone). You download the app to your phones, and then your teen lets you check on his or her whereabouts, perhaps in exchange for getting an iPhone in the first place. The Locimobile app allows you to see exactly where your child or children are on a map. You can monitor several kids at one time.

Read the full story

Understanding Dementia And 'Wandering'

NPR - USA - July 14, 2009 - A shoe company, Aetrex Worldwide, and a firm that makes global positioning devices, GTX Corp., have created shoes containing GPS technology for wanderers to ...

GTX in Sports Illustrated

June 29, 2009 - GTX, a technology company, and Aetrex Worldwide have announced plans for shoes containing a GPS chip that will allow family members or saftey personnel to locate anyone wearing the shoes through online tracking software.

Download the article

GPS Tech Review:

Interviews with Leading GPS Innovators

GPS Tech Review is a forum for current news stories and interviews with the leading innovators of GPS-enabled personal location services.

Abductors of Children May Run, But Today Code Amber and SA-Announce Make it Much More Difficult for Them to Hide

Timely missing person's alerts and rich graphics delivered to your phone.

Mandeville, LA (PRWEB) June 25, 2009 --www.CodeAmber.com News Service the nation's leading internet and digital display missing persons alert service, a wholly owned subsidiary of www.GTXCorp.com (GTXO.OB), has expanded its multimillion viewer reach with an additional 2 million www.syn-apps.comsubscribers. SA-Announce, Syn-Apps' notification system, is a feature-rich communication application that works with Cisco Unified Communications Manager to distribute alerts across enterprises such as; NASA, Tiffany & Co and Martha Stewart Living, as well as numerous schools and government offices. The Code Amber alerts will be available to the SA-Announce subscribers and accessible in real-time appearing on their VOIP enabled phones.

Read the full story

GPS shoe to track Alzheimer's patients

A new shoe outfitted with a GPS chip aims to offer peace of mind to Alzheimer's patients and their caregivers.

London, England (CNN) -- June 10, 2009 -- The embedded GPS tracking system will allow the wearer of the shoe to be located instantly online and for their whereabouts to be monitored in real time.

Read the full story

GTX Corp in Sports Intelligence Magazine

May 2009 - GTX Corp., which markets patented two-way GPS Personal Location Services (PLS) solutions, will launch two new applications this summer - expanding its LOCi brand with iLOCi2 and Code Mobile.

Download the Article Here

GTX Corp in Lextech May Newsletter

Download the Full Newsletter Here

GTX Corp on RedChip Real Radio

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GTX in Bottom Line Health

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GTX Corp on RedChip Real Radio

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GTX Corp on CNBC

Watch the video clip

GTX Corp on RedChip Real Radio

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GTX Corp on The Early Show

Watch the video clip

GTX Corp on the Discovery Channel

Watch the video clip

GTX Corp in the Philidelphia Inquirer

Read the article

GTX Corp on KCBS Radio, San Francisco

Listen to the audio clip

GTX Corp on KFWB Radio, Los Angeles

Audio clip 1, Audio clip 2, Audio clip 3

GTX Corp on the KGW News, Portland, OR

Watch the video clip

GTX Corp on the Boston 10 o'clock News

Watch the video clip

GTX Corp in Los Angeles Business Journal

Download the full article

GTX Corp in Pervasive Computing Magazine, April/June 2007

Download the full article

GTX Corp in Budget Travel Magazine, May 2007

Read the full article

GTX Corp in Footwear News Magazine, April 2007

Read the full article

Kids Sneakers That Know Where They Are

Castro Valley Forum - CA, USA - By : Michael Singer : 10/16/07

There is a trend in high-tech that recommends adding location-based services to anything and everything. But it has me pulled between wanting to see really cool gadgets and avoiding a Big Brother-like society.

The latest is a new high-tech tennis shoe coming to the market that lets parents and guardians track the movements of their family using Global Positioning Systems or GPS technology.

Called the "Smart Shoe," the miniature device is inserted in the sole of the low-top sneaker. An antenna that runs up the back of the footwear communicates with satellites and relays a location back to a subscription Web site service for easy viewing. Los Angeles-based GTXC, which makes the devices and the service, said it is hoping to put Smart Shoes in stores by the end of the year. Shoes with the technology could cost between $100 and $200. The tracking service is expected to cost about $20 a month.

Follow That Kid

Today's technology makes it easier for parents to know where their kids are and what they're doing.

By Joe Burris | Baltimore Sun | July 1, 2007

Michelle Smith had been reluctant to buy a cell phone for her 7-year-old daughter, Daysha. Then one day in April, a substitute teacher placed the Radford, Va., girl on the wrong school bus. Instead of being dropped off at her older sister's after-school program as planned, Daysha was sent home - only to find the doors locked.

As she sat on her front porch crying, her mother drove around town, searching frantically for the girl. No one at the school could tell her which bus the girl had been put on.

"Then my next-door neighbor called," said Smith, "and said, 'I have your baby.' "

The scary moment had a happy ending, but Smith didn't want to take a chance on losing her daughter again. So she did what many other parents are doing - she bought her child a cell phone equipped with an electronic device that could keep track of her whereabouts.

Download the full article

Tracking technology hits the ground running.

Wherever you go, there you are. And we know where you are.

By Nancy Francis

GPS technology will soon be at your feet, offering peace of mind to loved ones of Alzheimer's sufferers, people with autism, active preschoolers and others who might wander into harm's way or get lost.

A Los Angeles-based company that sees opportunity in the merging of GPS tracking technology and footwear, has developed several prototypes of GPS tennis shoes.

GTX Corporation is having discussions with various footwear manufactures (including some in Oregon) about licensing its technological designs and connectivity system.

During a recent visit to Portland, GTX Corp CEO Patrick Bertagna showed KGW a prototype of the company's GPS shoe.

Download the full article

Mobile Ways to Keep Track of Your Kids

By Lori Tucker, (WATE) Knoxville, TN -- June 7, 2007

As technology makes our society more mobile, there are more mobile ways to keep track of your loved ones including cell phones, car trackers and even shoes. GPS shoes That's right, an LA company has patented a GPS system in a shoe.

Xplorer Smart Shoes, made by GTX Corp., are able to track the person wearing them in real time or by remote surveillance.

GTX says the shoes work particularly well for: children, people with Alzheimer's disease, outdoor adventures, military, police, fire and public safety workers.

IN THE PIPELINE: Tracking All The Uses For Positioning Chips

By Donna Fuscaldo - DowJones Newswire - May 1, 2007

For Patrick Bertagna, the eureka moment came a few years ago when watching the coverage of the Elizabeth Smart abduction. After spending years helping companies track their products via software, Bertagna decided it was time to do something that mattered.

So the serial entrepreneur, armed with a couple of checks from friends, launched Global Trek Xploration Corp., a Los Angeles-based company that's developing shoes embedded with a global positioning chip. The shoes will enable parents to monitor their children's every movement and caregivers to keep real time tabs on elderly or sick people.

Download the full article

Top-Notch Security

M2M - Specialty Publications - April 6, 2007

M2M technology providers and system integrators often cite efficiency improvements and new revenue opportunities as common indicators of return-on-investment. However, as more and more customers use machine-to-machine applications to collect data, security has not only become a top-notch priority for end users and OEMs (original equipment manufacturers) but also a highly valued part of fostering a positive ROI.

According to IDC Corp., www.idc.com, Framingham, Mass., as devices enabling a mobile workforce continue to shrink in size, the increased likelihood of losing devices, such as laptops, mobile phones, BlackBerrys, has caused growing concern over the sensitive corporate information they contain.

Smart Shoes Get Smarter

M2M - Specialty Publications - April 2, 2007

Smart shoes just got a little smarter. The newest models of GPS-enabled (global positioning system) shoes from Global Trek Xploration Corp. (GTXC), www.gtxcorp.com, Los Angeles, Calif., will now be equipped with wireless and location modules from Enfora Inc.,www.enfora.com, Plano, Texas.

GTXC chose Enfora’s Enabler IIG-A-GPS modules for its robust and accurate platform, company executive say. Eric Stalnaker vice president of business development at GTXC explains, “Enfora and the Enabler II provide us with an integrated approach to software, Internet connectivity, and customization that lets us focus on our product and service offering.”

Wireless Briefs

by Andrew D. Smith | Dallas Morning News | Thursday, March 29, 2007

Few at conference get to soul of GPS shoe

Satellite tracking services were expected to be one of the big attractions at this year's big wireless conference in Orlando, but the satellite shoe seemed to surprise most of the people walking around the convention floor.

Many passers-by Wednesday furrowed their brows or shook their heads at what appeared to be a silly toy for spoiled yuppie joggers. Only a few investigated long enough to realize that the GPS shoe may well be one of the least frivolous prototypes on display among the 1,100 exhibitors. Developers plan to sell the device as a way to track mentally disabled people or seniors who have Alzheimer's disease.

Where would you be without GPS?

Perhaps carrying fewer gadgets: The technology is being added to shoes, MP3 players, dogs

By Carolyn Y. Johnson | Boston Globe | February 19, 2007

This month, GTX Corp. launched a line of Xplorer Smart GPS shoes that transform sneakers into a wearable LoJack system.

ABI Research found that the number of people in North America who subscribe to GPS-enabled location-based services more than doubled between 2005 and 2006, from 1.6 to 3.9 million. The number of subscribers is projected to rocket to 52 million in 2011.

That means companies working in what used to be a niche market have been enjoying explosive growth. Revenues at TomTom NV, a Concord-based maker of personal navigation products, have increased more than 500-fold since 2001, from $2.5 million to an estimated $1.7 billion last year. Garmin's business has exploded into the mainstream, too, and the company ran its first Super Bowl ad this year. Boston-based start-up Skyhook Wireless brings location awareness to any device with WiFi, and announced a major partnership this month with GPS platform maker SiRF.

Xplorer shoes offer advanced personal location services

from Wearable Electronics

January 29, 2007 - We’ve written several times about the concept of electronically fencing dogs and cats for their safety, or the safety of others. Similarly, as GPS technologies have become commercially viable, of tracking assets and loved ones to ensure their safety. Now personal location services company GTXC Corporation, is set to unveil a line of Xplorer Smart GPS shoes at the World Shoe Association (WSA) in Las Vegas on February 1 which offer a range of new opportunities. Xplorer shoes incorporate a small and robust GPS tracking device which hooks up with GTXC's internet user portal to offer a very compelling array of personal location services.

Integrated GPS Shoes by GTXC

Getoutdoors.com Outdoor Blog - Friday, February 2. 2007

Integrated GPS Shoes by GTXC Though originally made to track patients and kids, we're sure the shoes will be integrated soon with the Nike + Ipod so you can track your run in your personal Google mashup. Or hide it in your wife's purse to see whether she's banging San Francisco's mayor, Gavin Newsom. Or something like that. The system from GTXC has a sophisticated GPS integrated into the shoe, which communicates directly with a satellite, which then relays locations in real-time to their monitoring center and made available via internet or phone. Predetermined geographic areas can also be defined and alerts sent when the person being tracked leaves or enters the area. And don't worry, they already have a product for outdoor activities called the Wearable Caddy.

New Smart GPS Shoes

Manisha Kanetkar - Thursday, 1 February 2007

Keeping track of your loved ones has never been so easy (or so spy-like) with the new Xplorer smart GPS shoes designed by GTXC.

The company boasts the shoes incorporate the smallest, most powerful and robust GPS tracking device currently available. GTXC says they are ideal for caretakers of children or the elderly to easily monitor the location of their charges.

So, for example, they can preset perimeters of safe zones or unsafe zones, and then receive mobile phone alerts if a perimeter is breached by the wearer. This is handled by what the company calls its ‘set-it-and-forget-it' Dual GeoFencing feature.

Shoes with GPS locator Coolest Gadgets

Jan 29, 2007 - GTX Corporation will be unveiling its new line of Xplorer Smart GPS footwear at the beginning of next month in Las Vegas. The Xplorer aims to usher in the next generation of GPS smart shoes by incorporating smaller and yet more powerful GPS chipsets inside the shoe itself to provide a more accurate reading....

GTX Corporation unveils GPS-equipped Xplorer shoes Engadget

Jan 26, 2007 - It seems like Sayo Isaac Daniel has some serious competition coming at him in the GPS shoe market, as GTX Corporation is unveiling its latest geo-tracking footwear at next week's World Shoe Association trade show. The questionably styled Xplorer kicks pack an internal GPS transceiver,...

GPS Shoes keep track of kids

January 25, 2007 - GPS-integrated shoes - now why didn't I think of that? The Xplorer line of Smart GPS shoes from GTX Corp. come with an integrated GPS tracking device which helps parents keep tabs on their children. In addition, parents are able to set up a virtual boundary, where they will be duly noted via SMS should the shoes leave beyond the designated area.

GPS Shoes Let Mommy Know Where You Are

January 25, 2007 - Good news for worried parents. These GTX GPS Xplorer Smart Shoes will let you keep track of your kids no matter where you are. Here's how it works.

Define a "safe" area around your house or school that it's safe for your kids to wander around. When the GPS signal goes outside of the area, an SMS will be sent to your phone alerting you of the situation. Then you're free to call your wife, the police, or Chloe from 24.

The GTX GPS shoes have a small GPS tracking device inside the shoe actually communicates the location to a central location tracking service

ESATO NEWS - Jan 26, 2007 - Xplorer, the next generation of smart GPS shoes, incorporates the smallest, most powerful and robust GPS tracking device on the market today. Drawing on a long history of patented embedded GPS technology for footwear and other consumer products, GTXC has been in development on the Xplorer line for the past three years. The new line advances the state of GPS tracking technology considerably, utilizing several groundbreaking innovations currently in the patent process.

GTX Corp. announces the Xplorer line of Smart GPS shoes

Thu, 25 Jan 2007 - The GTX GPS shoes have a small GPS tracking device inside the shoe actually communicates the location to a central location tracking service. So you could get your kids these GPS sneakers and define an area where it is safe for the kid to wander around. When leaving the defined area an SMS would be sent to your mobile phone notifying you of the situation. GTX calls this feature GeoFencing. The batteries powering the GPS unit inside the shoes last several days.

"With Liberty and Surveillance for All: Person-to-person Surveillance Gets Green Light from Public

Survey research from Boston University graduate students shows that Americans are more willing to engage in surveillance of loved ones than one might expect given our love for independence. Half of Americans are comfortable with being electronically monitored by a loved one for safety or health reasons. Nearly a third 32% say it is likely they will use a tracking device to monitor a loved one in the future."

"The greatest endorsement of P2P surveillance is that 66% of Americans are comfortable being monitored by concerned loved ones in case of emergency. That's an awfully large market waiting to be tapped by companies like GTX Corporation who debuts its first GPS-based tracking shoe for children this week."

Excerpts from recent Boston University Research indicating that two-thirds of Americans are comfortable being electronically monitored by loved ones in case of an emergency

Download the full article

Brave New GPS World

By James Klein, Larta VOX Editor - November 3, 2003

In the future, we won't lose anything. Advances in global positioning system technology allow users to easily pinpoint the location of any object on earth. GPS boards have been reduced to the size of a postage stamp. Soon, we could attach GPS locators to everything we own - cell phones, briefcases, wallets - and even our children.

GPS Shoe to Track Alzheimer's Patients

London, England - June 10, 2009 - A new show outfitted with a GPS chip aims to offer peace of mind to Alzheimer's patients and their caregivers.

Download the full article

GTX Signs Deal With Aertrex Worldwide

June 1, 2009 - GTX signs its first footwear deal for its Personal Location Services product with Aertrex Worldwide, which specializes in orthotic footwear.

Download the full article

Enfora and GTXC Advance Personal Tracking and Location with GPS-enabled Shoe

Plano, Texas - March 27, 2007 - Enfora, Inc., today announced GTX Corporation's (GTXC) adoption of the Enabler® IIG-A-GPS embedded wireless and location module into their latest model of the GTXC Xplorer® GPS Smart Shoe designed to monitor the whereabouts of loved ones.

"Enfora and the Enabler II provide us with an integrated approach to software, Internet connectivity and customization that lets us focus on our product and service offering," said Eric Stalnaker, VP of Business Development at GTXC. "By working with Enfora, we know the Xplorer® A-GPS Smart Shoe is built on a robust and highly accurate platform."
Download the full article

GTXC Wins Praise, Reduces Chip Size

Los Angeles, California, March 5, 2007 - GTXC received a strong, positive reception as a third time exhibitor at the recent World Shoe Association show in Las Vegas, NV. It also won praise from the technology community at the latest 3GSM World Congress in Barcelona, Spain. GTXC continues to build momentum, enhance its intellectual property and provide leadership throughout the embedded GPS footwear space.
Download the full article

New era of "Wearable GPS" capabilities enabled by technological breakthrough.

February 21, 2007, Los Angeles, CA - GTXC, founder of the Personal Location Services category and leader in Miniaturized GPS Technologies, has created a proprietary, "single click" software application used to activate the GPS-2-SMS Dual-GeoFence features that form an integral part of its embedded GPS technology. The recent Multi Dual GeoFence patent application filled in February 2007 is the most current of seven applications filed since the company's founding five years ago, and promises to bring new capabilities and efficiencies to the Wearable GPS industry. The company's first, US Patent 6.788.200 titled GPS Footwear was issued in September 2004.
Download the full article

GTXC unveils new generation of Smart GPS Shoes

Los Angeles, CA, January 25, 2007 - GTX Corp., a dominant world leader in personal location services, will unveil their new Xplorer line of Smart GPS shoes on February 1st, at the World Shoe Association (WSA) in Las Vegas.

Xplorer, the next generation of smart GPS shoes, incorporates the smallest, most powerful and robust GPS tracking device on the market today. Drawing on a long history of patented embedded GPS technology for footwear and other consumer products, GTXC has been in development on

the Xplorer line for the past three years. The new line advances the state of GPS tracking technology considerably, utilizing several ground-breaking innovations currently in the patent process.
Download the full article

GTXC to provide maritime version of personal GPS tracking devices to governmental security agencies and consumers

Los Angeles, California, October 4, 2006 - GTXC (GTX Corporation), the Personal Location Services (PLS) company known worldwide for developing and commercializing miniaturized personal GPS tracking technologies - including ground-breaking shoe-based satellite tracking products - announced today that they have signed a licensing agreement aimed at providing miniaturized, waterproof personal tracking devices to governmental security agencies and consumer maritime enthusiasts.
Download the full article

An Open Letter To GTX Corporation's Investors, Customers And Friends

January 5, 2007 - GTX Corp has received many inquiries this week regarding recent reports that another manufacturer has entered the GPS footwear sector claiming, among other things, that they have patented GPS footwear technology, and that there is a technology called "Quantum Satellite Technology."
GTXC believes that the convergence of high technology with consumer products should be represented to the public in an ethical and honest fashion. GTXC takes issue with the claims made in those recent reports, and believes that they do not paint an accurate and truthful picture. As such, GTXC is taking immediate, strong and active steps to respond to those claims in a responsible way to inform the public and the relevant media about GTXC, its products and technology, and the true status of the following facts.
Download the full article

CEO & President of GTXC - to Address Cornell MBA Class

Los Angeles, California, November 6, 2006 - Patrick Bertagna, CEO and President of GTXC (GTX Corporation), the Personal Location Services (PLS) company known worldwide for developing and commercializing miniaturized personal GPS tracking technologies - including

shoe-based and hand held satellite tracking products - will address the Cornell Business students that are analyzing a case study that was developed over the past year at the university.
Download the full article

GTXC announces newest addition to PERSONAL GPS suite of miniaturized location-finding solutions

Los Angeles, California, June 1, 2006 - GTXC (GTX Corporation), known worldwide for developing and commercializing innovative shoe-based GPS tracking technologies, today announced a downloadable location-finding application for hand held PDAs.
Beginning with PaqTrax™ for the HP iPaq 6515, the newest GTXC application integrates a PDA's embedded GPS abilities with the internet-based GTXC TrackPack™, creating a complete Personal GPS™ tracking and location-finding solution.
Download the full article

Boston University study validates Americans' acceptance of Person-to-Person (P2P) surveillance

Los Angeles, California, March 14, 2006 - GTXC, Inc., maker of miniaturized tracking technologies - including a patented shoe-based GPS location-finding platform - shared in the release of a recent Boston University study which offers proof of strong consumer demand for Person-To-Person (P2P) tracking and surveillance products. Despite increased media attention to governmental eavesdropping and surveillance issues, the study's conclusions contradict privacy advocates and redress recent media sentiments by finding that up to 81% of those surveyed approve the use of P2P surveillance under specific situations, and nearly a third (32%) say they are likely to use a tracking device to monitor a loved one in the future.
Download the full article

GTXC announces world's first GPS location-reporting technology built into footwear

Los Angeles, California, February 10, 2006 - After several years of intensive research and development, GTXC (GTX Corporation) today announced the world's first GPS location-reporting platform built into footwear. Unveiled at the World Shoe Association trade show in Las Vegas, Nevada, the company's patented solution links advanced GPS and cellular miniaturization technology with internet-based monitoring capabilities to provide accurate, real-time location and movement history to a wide range of users. Their shoe-based technology also introduces an innovative platform for delivering a new category of portable, personal consumer-based applications, from exercise monitoring and live real-time gaming to interaction with appliances and other household items.

Download the full article

With Liberty and Surveillance for All: Person-to-person Surveillance Gets Green Light from Public

February 2006 - Excerpts from recent Boston University Research indicating that two-thirds of Americans are comfortable being electronically monitored by loved ones in case of an emergency. Survey research from Boston University graduate students shows that Americans are more willing to engage in surveillance of loved ones than one might expect given our love for independence. Half of Americans are comfortable with being electronically monitored by a loved one for safety or health reasons. Nearly a third 32% say it is likely they will use a tracking device to monitor a loved one in the future."

Download the full article

DailyTech, LLC - Michael Barkoviak - March 17, 2010 - GTX Corporation may be one step closer to trail running shoes that have integrated GPS directly into the shoes. GPS use has increased in the cycling and running worlds, as it is used to accurately track time, distance, and speed. There has been discussion of GPS-enabled running shoes in the past, but nothing significant ever materialized.

Oct 26, 2010

Listen to an interview with GTX Corp CEO, Patrick Bertagna

on wsRadio - The Peggy Smiley Show.

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GPS Tracking Apps for your smart phone.

Featured Products

Shoes to monitor seniors suffering from dementia.

While GPS tracking can answer the "where" question, the Code Amber Alertag knows the answers to the "who, what and when" questions that first responders to emergencies need to know to provide informed treatment.

2 Way GPS has helped the lives of thousands by guiding emergency services to the precise location of people and pets in need of immediate attention. Getting there quickly however is only the first step. That's why everyone needs a Code Amber Alertag

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From: Jeffrey Epstein [jeevacation@gmail.com]
Sent: 2/15/2013 4:52:58 PM
To: Larry Summers [redacted]

take-it-or-leave-it deal by the U.S. on the nuclear issue is the wrong strategy

Ray Takeyh

February 14, 2013 -- On Feb. 26, the United States and Iran will once more resume their diplomatic ritual, in the so-called six-party talks, over Iran's disputed nuclear program. As the two perennial adversaries eye one another, there are competing paradigms about how to deal with Tehran.

An emerging school of thought suggests that the best means of "testing" Iran is to offer it a final nuclear agreement that presumably promises measurable relief from sanctions for significant Iranian concessions. Iran's failure to grasp such an offer would then conclusively demonstrate to both domestic and international audiences that the cause of the impasse is not American belligerence but Iranian truculence.

But this approach fails to recognize that an arms-control process is necessarily an incremental one, nor does it offer a practical substitute to the existing step-by-step diplomacy.

Iran's nuclear program encompasses a vast complex of enrichment facilities, centrifuge construction plants, uranium extraction companies and thousands of scientists working in university and government laboratories. Iran is enriching uranium at both 5% and 20% levels, experimenting with high-velocity centrifuges and seemingly in the process of constructing additional enrichment facilities.

Such a multilayered, multifaceted program can be dealt with only on a piecemeal basis, as the technical details and rules for inspections are too complex to be addressed in a single agreement.

Moreover, should the United States offer Iran a final deal, Tehran still has a right to contest and negotiate its provisions and offer counterproposals.

The international community is unlikely to concede to either more sanctions or the use of force until Iran's objections are taken into full consideration. As such, a grand deal that is supposed to provoke a moment of clarity is likely to be enmeshed in the existing, protracted arms-control process.

Another complication is the advent of public opinion and critical constituencies in Iran devoted to the perpetuation of the program. The growing public sentiment is that Iran has a right to acquire a nuclear capability. As the program matures, it is becoming a source of pride for a citizenry accustomed to the revolution's setbacks and failures.

Also emerging is a bureaucratic and scientific establishment with its own parochial considerations for sustaining the nuclear investment. A clerical leadership that is dealing with a restive population and empowered security services cannot easily dispense with its nuclear trump card.

All this suggests that the best means of addressing Iran's nuclear challenge is to mitigate its most dangerous dimensions. The focus should remain on Iran's high-grade enrichment and its underground nuclear facility nestled in mountains outside Qom. Tehran seems to have conceived an ingenious path to nuclear advancement, one that involves increasing the size and sophistication of its civilian atomic apparatus to the point where it can quickly surge into a bomb. While staying within the rules of the International Atomic Energy Agency's inspection process, Iran is essentially expanding its capabilities while shielding them under the veneer of legality. Given the fact that much of civilian nuclear technology can easily be misappropriated for military purposes, Iran can construct an elaborate nuclear infrastructure while remaining within IAEA guidelines.

The diplomatic challenge is to derail this path to a nuclear weapon by imposing significant restraints on its program. And this can still be done through a process that proceeds incrementally and sequentially.

U.S. officials would be wise to get out of the crisis mode and put some time back on the clock. The Iran issue always seems urgent, and yet somehow there is always time to deal with it. Washington should acknowledge the obvious, namely, that given Iran's gradualist approach, it is still years from completing an efficient enrichment infrastructure, constructing a nuclear arsenal and developing a reliable means of delivery. By agreeing to a compressed timeline, the U.S. only narrows its options and makes a solution even more elusive.

As the United States again contemplates its Iran conundrum, it should eschew calls for a take-it-or-leave-it deal. The history of Iran's confrontation with the international community suggests that keeping it a crisis situation benefits the Islamic Republic. Ironically, it is the Western powers that have generated alarmist conditions. And then to escape the predicament of their own making, they offer Iran more concessions and further incentives.

To avoid a repeat of that outcome, it would be prudent to have a sense of proportionality and appreciate that, in the end, time works best for the United States and not the economically beleaguered theocracy.

Ray Takeyh is a senior fellow at the Council on Foreign Relations.

Article 2.

The Guardian

Whether it's North Korea or Iran, sanctions won't work

Simon Jenkins

13 February 2013 -- Iranian president Mahmoud Ahmadinejad. 'Threats and sanctions have not weakened the regime’s determination to proceed [with nuclear weapons], but rather weakened opposition to it'. Photograph: Sven Hoppe/EPA

North Korea has set off a third nuclear test explosion. It has done so in defiance of the UN, America, Japan and even, reportedly, its sponsor, China. It has said to hell with everyone, in a brutal comment on western economic sanctions.

The UN security council met yesterday and Washington threatened "significant consequences" – code nowadays for "tighter sanctions". Every shred of evidence suggests that these will not achieve the declared goal. They will merely add to the impoverishment of North Korea's people by its own government. Sanctions are the most counter-productive tool known to diplomacy. Yet we keep imposing them. Why?

Sanctions assume that all countries react to external pressure as might a capitalist democracy. They assume a misguided regime will change its mind and put financial advantage above its definition of national interest. "Smart sanctions" (really dumb sanctions) further assume the rich can be punished without punishing the poor, and that all dictators' wives want to fly abroad and shop at Harrods. They assume that trade guides political action and political action trumps dictatorship.

Economic sanctions are hugely popular to western politicians, not because of their effect but because of their cause: the desire to stand on an international stage and being seen to "do something". They are the least-cost first resort of the laptop bombardiers of global intervention. They sound punitive and aggressive without inflicting any hardship on the imposer.

After North Korea the other target in the sanctions frame is Iran. Everything at present suggests that ever-tighter sanctions have done nothing to curb Iran's nuclear programme. Indeed, by inducing paranoia, probably the reverse. Sanctions have certainly "bitten", to the glee of their advocates. They have brought inflation and a collapse in the currency, the rial. They have harmed ordinary people and solidified sentiment against the west and the "great Satan" of the US. Assassination and cyber-weapons have wiped out a few scientists and scrambled a few computers.

What sanctions have not done is weakened the power of the ayatollahs or their private army, the Revolutionary Guards. Both seem as secure as ever, while (relatively) moderate civilian politicians are reduced to feuding and arresting each others' children. Iran's nuclear programme appears to proceed independent even of the organs of its own state.

A spoof article in the Economist last year portrayed Iran's supreme leader, Ayatollah Khamenei, ruminating on western nations' obsessive posturing towards his country. He mused that these were unstable, unreliable places, dangerous though probably not all mad. But since it was hard to be sure, "I would feel a lot safer if we already had that bomb". Similar insecurity drove sanctioned Cuba to accept Russian missiles in the 1960s, and sanctioned Iraq and Libya to pretend to build weapons of mass destruction in the 1990s.

Sanctions never stop bad things happening. Rather they entrench dictators, build up siege economies and debilitate the urban middle class from which opposition to dictatorship grows. As Khamenei said in a speech a year ago, sanctions were "painful … but make us more self-reliant". Indeed, for a regime to be sanctioned is to receive an elixir: witness Castro, Gaddafi, the ayatollahs and the ruling cliques of Burma, Afghanistan and North Korea. That sanctioned regimes sometimes come to an end is not proof that sanctions work, rather that they take a long time and usually require war to "work".

This is a rarely researched topic because sanctions are diplomatic ideology rather than science. A debate in 1998 in International Security magazine saw the Chicago academic, Robert Pape, barely challenged in his view that only around five of the 115 cases of sanctions imposed since the war could claim any plausible efficacy. Most merely inflicted "significant human costs on the populations of target states, including on innocent civilians who have little influence on their government's behaviour". They are a ready invitation to war.

When I was reporting on South Africa in the 1980s I became convinced that sanctions were aiding import substitution and benefiting the Afrikaner economy, probably giving apartheid an extra decade of life. They likewise prolonged Ian Smith's regime in Rhodesia. Sanctions made Libya's Gaddafi so rich he could spoon money into the London School of

Economics. They made Saddam Hussein one of the 10 wealthiest people in the world. Besides, sanctions create sanctions-busting which, like drugs, is a global criminal industry born entirely of the idiocy of western diplomacy.

A year ago the Foreign Office defended yet another round of sanctions against Tehran on the grounds they would "hasten Iran's economic collapse and deepen rifts within the regime, in the hope that saner voices will deem the price of pursuing nuclear weapons too high". Economies don't collapse, any more than poverty changes governments. Even Greece, now the most "sanctioned" nation in Europe, has not collapsed. Places just get poorer. As for "saner voices", they go into exile, hiding or prison. That's where sanctions send them.

Iran is a proud nation of 80 million mostly Muslim people, one of many Asian and African states struggling between theocracy and democracy, tradition and modernity. These are agonising struggles among and within peoples, to which the west has contributed nothing but hostility and belligerence. Under the cloak of "counter-terror", it has been as crass as it was during the Crusades. Of course no one wants to see nuclear weapons spread. Russia tried to stop China getting them. China tried to stop North Korea. The west tried to stop India and Pakistan, while hypocritically tolerating Israel and the replenished arsenals of France and Britain. No pressure made the slightest difference to anyone.

If Iran really wants a nuclear weapon, it will get one – the more so when it is threatened with dire retribution if it does. That is how such states react to pressure. Ever since the dodgy election of 2009, threats and sanctions have not weakened the regime's determination to proceed, but rather weakened opposition to it. If ever there was a country unlikely to respond to diplomatic bullying, it is Iran. If ever there was a country that might respond to constructive engagement, to commercial, governmental and cultural intercourse, it is also Iran. Why the west should want to make it another North Korea passes comprehension.

Article 3.

The Washington Institute

Year of Decision: U.S. Policy toward Iran in 2013

James F. Jeffrey and Thomas Pickering

February 12, 2013 -- *On February 7, 2013, James F. Jeffrey and Thomas Pickering addressed a Policy Forum at The Washington Institute. Ambassador Jeffrey, a former assistant to the president and deputy national security advisor, is author of the new Institute study Moving to Decision: U.S. Policy toward Iran. Ambassador Pickering served in numerous key posts at home and abroad over a five-decade career, including undersecretary of state for political affairs. The following is a rapporteur's summary of their remarks.*

JAMES F. JEFFREY

The move to decision on Iran is the most pressing and dangerous issue on the U.S. and international agenda in 2013. The year ahead will largely define the longstanding struggle between Washington and Tehran, and the considerable stakes involved make it absolutely crucial that a swift and decisive resolution be achieved. Regardless of the outcome of the nuclear issue, however, Iran will continue to present a long-term challenge to the United States because of clashing ideologies, conflicting foreign policy goals, and Iran's claim to regional hegemony.

There are four likely outcomes to the nuclear issue: a unilateral Iranian decision to halt or dramatically slow its progress toward a nuclear weapon; a negotiated outcome, whether through the P5+1 (i.e., the five permanent members of the UN Security Council plus Germany) or bilateral negotiations; a military strike, as threatened by President Obama and Israeli prime minister Binyamin Netanyahu; and an explicit or implicit shift to containment, indicating that Washington would be prepared to coexist with a nuclear-armed Iran.

The most effective resolution would be a negotiated outcome -- to achieve it, Washington will need to take preliminary steps on several fronts. A serious compromise needs to be put on the table, including an offer to suspend crippling oil sanctions in return for specific, verifiable Iranian steps to eliminate any nuclear breakout capabilities. Equally significant is establishing a credible military threat, given that Tehran has been willing to endure increasing economic pressure in order to continue its nuclear program. The regime is unlikely to concede anything during negotiations if it does not believe that Washington will actually follow through on such threats. Although specific public redlines are often unpalatable, the Obama administration must clarify internally when it would take military steps, and these intentions must be made clear to the Iranians.

In the same vein, the military option requires a credible negotiating complement, as seen in the early 1990s with Iraq. To legitimize military action against Saddam Hussein's regime, Washington had to prove that all other options had been exhausted. Similarly, the only way to set the predicate for military action against Iran is to show the regime and the international community that everything has been tried, and that Washington has left Tehran with a way out. Failure to do so would undermine the legitimacy of any strikes.

It is also important to understand that curtailing Iran's nuclear progress will not by itself alter the regime's regional agenda -- nuclear ambitions are but an extension of Tehran's wider aspirations toward hegemony in the Middle East. Unfortunately, none of the longer-term proposals for addressing that issue seem feasible at the moment (e.g., regime change by internal or external means; a shift in Tehran's views on the Supreme Leader and succession; a "grand deal" between Washington, Iran, and the international community).

One lesson to be learned from past interactions with Tehran (or lack thereof) is that when the United States proactively opposes Iranian aggression in the Middle East, the regime relents, but when Washington offers a more passive response, Iranian aggression increases. With respect to Syria, for example, it cannot be assumed that Bashar al-Assad will fall at all, let alone quickly, without active U.S. engagement. If the Assad regime does in fact survive, Iran would become increasingly emboldened, with potentially disastrous consequences for the United States and its allies and interests in the Middle East.

Denuding U.S. forces in the region to enable a pivot to Asia is also risky. Nowhere else in the world is America more likely to deploy forces than in the Persian Gulf in opposition to Iran, and nowhere else is it of utmost importance that any potential confrontation be won decisively in the next five to ten years than with the Islamic Republic.

Going forward, Washington must discriminate between Iranian behaviors it considers unacceptable -- such as support for terrorism, hegemonic ambitions, and progress toward nuclear weapons -- and those it can tolerate. U.S. officials could open the door for negotiations by making clear to Tehran that they do not seek regime change; the first step in that regard would be to let Iran know that Washington respects it as a nation-state and not a transnational revolutionary movement.

Finally, disorganization within the U.S. government and a "go it alone" mentality have accounted for many of Washington's internal difficulties in responding to the Iranian challenge. To alleviate this problem, all cabinet-level officials must be in constant and complete coordination, devoid of routine bureaucratic obstacles. In addition, the appointment of a senior subcabinet official whose sole responsibility is Iran (or, alternatively, a small group of officials in constant coordination) could allow the administration to reorganize bureaucratically in preparation for this year of decision.

THOMAS PICKERING

Discussions of containment policy typically imply accepting the Islamic Republic as an inevitable nuclear power and using deterrence to deal with a nuclear-armed Iran. Yet such an outcome would be disastrous for U.S. nonproliferation policy, which is based on the notion that fewer nuclear states means less chance of miscalculated use. If Iran attains a nuclear weapon, other regional powers would likely follow suit -- clearly an undesirable outcome for the international community.

At the other end of the spectrum, using military means in the short term to guarantee prevention would entail a vast use of force -- essentially an unofficial, semipermanent occupation of Iran. This is not a viable path, particularly since other diplomatic possibilities have not yet been exhausted.

Similarly, sanctions, while effective, are not sufficient by themselves. They must be intertwined with negotiations -- as Washington and its allies increase the pressure, cohesive and meaningful talks with equivalent concessions should follow suit. Some have argued that negotiations should expand to a "big for big" format, but decades of mistrust between the United States and Iran make smaller deals more practical. Such an approach would have to focus on ending Iran's most problematic enrichment activity: processing uranium to the 20 percent threshold, which makes the leap to weapons-grade material much easier. Instead, the regime could limit itself to 5 percent enrichment, and under strict supervision by the International Atomic Energy Agency.

The intelligence community widely believes that although Iran has not yet decided to make a nuclear weapon, it is still moving to acquire all the necessary capabilities in case it chooses that path. Accordingly, Washington will need to obtain a concrete Iranian commitment to convert its stocks of readily upgradeable gaseous uranium into metallic fuel elements, which pose significantly less of a threat. A serious inspection system would need to be implemented in order to monitor these requirements. In return, the Iranians would expect the lifting of nuclear-related sanctions. They would also likely ask for acknowledgement that they have the right to continue their civil enrichment program, whether for supposed use in cancer treatment or to safeguard against a potential Russian decision to cease fueling the Bushehr reactor.

Thus far, President Obama has been frustrated at the lack of progress in response to his openness toward the Iranian regime, and his new cabinet has an obligation to help him solidify a negotiating position that improves the situation. If the Iranians continue to reject U.S. positions that seemingly respond to some of their demands, then the administration should begin applying other pressures. These steps should be taken sooner rather than later so that the parties can move toward a mutually acceptable conclusion.

Washington must also keep in mind that Supreme Leader Ali Khamenei has the last word on all matters in Iran, and that negotiations will go only as far as he allows them to go. In years past, he issued a fatwa condemning nuclear weapons -- Washington could take advantage of this fact by drafting a UN Security Council resolution endorsing the fatwa. This could be a small step toward boosting Khamenei's international profile while simultaneously pressuring Iran to follow its own religious decree.

To be sure, regime change remains an attractive alternative on paper, and some in Washington view it as an insurance policy. Historically, however, regime change has not been a successful option for the United States, and internal attempts at toppling Iran's leadership have thus far been crushed by Stalinesque suppression, including the 2009 uprising. Despite such failures and Washington's limited influence in Iranian domestic affairs, U.S. policy should be to demonstratively support popular democratic movements.

Article 4.

TIME

Spy Fail: Why Iran Is Losing Its Covert War with Israel

Karl Vick

Feb. 13, 2013 -- Slumped in a Nairobi courtroom, suit coats rumpled and reading glasses dangling from librarian chains, the defendants made a poor showing for the notorious Quds Force of the elite Iranian Revolutionary Guard Corps. Ahmad Abolafathi Mohammed and Sayed Mansour Mousa had been caught red-handed and middle-aged. And if the latter did them a certain credit — blandly forgettable always having been a good look for a secret agent — the prisoners still had to explain why they had hidden 15 kg of the military explosive RDX under bushes on a Mombasa golf course.

Created to advance Iran's interests clandestinely overseas, the Quds Force has lately provided mostly embarrassment, stumbling in Azerbaijan, Georgia, India, Kenya and most spectacularly in Thailand, where before accidentally blowing up their Bangkok safe house, Iran's secret agents were photographed in the sex-tourism mecca of Pattaya, one arm around a hookah, the other around a hooker. In its ongoing shadow war with Israel, the Iranian side's lone "success" was the July 18 bombing of a Bulgarian bus carrying Israeli tourists — though European investigators last week officially attributed that attack to Iran's Lebanese proxy, Hizballah. That leaves the Islamic Republic itself with a failure rate hovering near 100% abroad and an operational tempo — nine overseas plots uncovered in nine months — that carries a whiff of desperation. A Tehran government long branded by U.S. officials as the globe's leading exporter of terrorism may be cornering the market on haplessness.

Within Iran's own borders, however, the story is different. Twice in the past two years Iranian intelligence has cracked espionage rings working with Israel's Mossad, Western intelligence officials tell TIME. In both cases, the arrests were the furthest thing from secret: announced at a news conference, each was later followed up by televised confessions broadcast on Iranian state television in prime time. Given Iran's history of trumped-up confessions, skepticism is more than justified. But the arrests appear to be solid. One intelligence official said the captured Iranians provided "support and logistics" to the Mossad operatives who carried out the assassinations of Iranian nuclear scientists.

At least four scientists were killed on Tehran's streets from 2010 to 2012, when, as TIME has reported, Israel ratcheted back on covert operations inside Iran. Officially, Israel has remained silent on the killings, though government officials will coyly say they welcome the deaths. The Jewish state maintains the same ambiguous posture on other "setbacks" to Iran's nuclear program widely — and correctly, Western intelligence officials say — attributed to Mossad, from the Stuxnet computer virus, to mysterious explosions like the massive blast at a missile base, which destroyed ballistic missiles that could reach Israel.

The covert onslaught dovetails with Israel's history of reaching "over the horizon" to disarm perceived threats at a distance. To keep advanced arms from reaching Hamas and Hizballah, Israel in the past year sent warplanes to bomb convoys and arms depots in Sudan and Syria, respectively, without apparent retribution. In the case of Iran, however, experts say the audacity of Israel's covert campaign stirred Tehran to revive an espionage effort that lay largely fallow since 9/11. The Spy vs. Spy contest that ensued would prove woefully one-sided, even in the third-world countries where Iran chose to strike, hoping to avoid heightened security awareness in the developed world. In the end, its only success came inside Iran, where the secret police operate without inhibition.

The shadow war may have started on Jan. 15, 2007, the day Ardeshir Hosseinpour passed away. Hosseinpour was a specialist in electromagnetics at the Nuclear Technology Center in the city of Isfahan, Iran, but his death might have escaped notice had Iran's government not kept it under wraps for almost a week, finally attributing it to fumes from a faulty heater. An online report by the American private intelligence firm Stratfor suggested another cause — radioactive poisoning — and hinted that Mossad's Caesarea section was back in business. Caesarea, named for an Israeli beach town that dates back to Roman times, is the operations branch of Israel's secret service, most notoriously responsible for the assassinations of some two dozen Palestinians (and an innocent waiter) after the 1972 Munich Olympics. Assassinations are carried out by a very small unit dubbed Kidon, the Hebrew word for "tip of the spear." Kidon operates at a remove from the legions of Mossad employees working in less lethal fields.

It would have been a unit called Hatzomet, or "The Junction," that recruited Majid Fashi, a handsome young Iranian who dropped out of high school to pursue a career in kickboxing. By the account he gave on Iranian state television early in 2011, Fashi presented himself at the Israeli consulate in Istanbul in 2007 and was vetted for a solid year before being shown any trust. Two years later, on Jan. 12, 2010, he would place a bomb on a motorbike parked on the sidewalk outside the Tehran home of Masoud Alimohammadi; the nuclear physicist was killed when it was detonated by remote control.

In the broadcast, Fashi accurately described the Mossad campus north of Tel Aviv. He said he had been given a laptop equipped with a second operating system and used it to communicate through online drop boxes. He was impressed by his handlers' thoroughness. At one point Fashi described studying a scale model of Alimohammadi's street. "It was an exact copy of the real one," Fashi said. "The tree next it, the street curb, the bridge." In a later broadcast, he was seated across from Alimohammadi's widow, who glared at him as he bowed his head and wept. Mossad officials were "pissed off and shocked" seeing their agent on television, the intelligence official said.

Fashi was executed in May 2012. About the same time, Iran's intelligence minister announced the arrest of 14 more Iranians, eight men and six women dubbed members of the "Terror Club" in the subsequent prime-time broadcast of that name. Filmed in shadow, and rich in atmospherics, the Aug. 5 program recreated Alimohammadi's death and four subsequent attacks: they started with the Nov. 29, 2010 nearly simultaneous attempts on Majid Shariari and Fereydoun Abbasi, nuclear scientists driving to work when magnetic "sticky bombs" were attached to the side of their cars from passing motorcycles. Abbasi managed to escape before it detonated, saving his wife as well. Shariari was killed — a significant setback for the Iranian nuclear program where he was the top scientist, according to a Western intelligence official.

The confessed agents offered absorbing detail — they were aboard a Bajaj Pulsar, wearing helmets, when the magnet bomb stuck on the right front panel of Shariari's car exploded. The riders scrambled into the "trail car" assigned to follow the target and disappeared into the traffic of the Imam Ali Autobahn. Already gone was the car assigned to cut off and slow the car carrying the scientist. They claimed to have rehearsed on a practice track inside Israel. None of the details could be confirmed, but an intelligence official acknowledged: "Another network was taken."

The third scientist, Dariush Rezaeinejad was shot on July 23, 2011 after picking up his child at a day care; his wife described hearing shots whiz by as she chased the assailants. The most recent assassination was the Jan. 11, 2012 death of Mustafa Ahmadi-Roshan, an expert on uranium enrichment, also by a magnet bomb slapped on his car during his morning commute.

By then, Iran was trying to strike back. The task of avenging the scientists fell to the sprawling Quds Force's own covert-operations division, known as Unit 400. It took a shotgun approach, targeting Israeli diplomatic missions in a variety of countries, mostly in the developing world where the global antiterrorism mesh is not so fine. Exposed in Baku, Tbilisi, Johannesburg, Mombasa and Bangkok, the failures mounted at a pace that was itself one of the problems. In the world of espionage, a quality covert operation can take years to pull together. Yet in the 15 months from May 2011 to July 2012, the Quds Force and Hizballah attempted 20 attacks, by the count of Matthew Levitt, a former State Department counterterrorism official. "Hizballah and the Quds Force traded speed for tradecraft and reaped what they sowed," Levitt writes in a January report for the Washington Institute for Near East Policy. "Quds Force planners were stretched thin by the rapid tempo of their new attack plan, and were forced to throw together random teams of operatives who had not trained together."

The decline in quality was so striking it initially inspired disbelief. Recall the preposterous-sounding plot weaving together a former used-car salesman, Mexico's Zetas drug gang and a bank transfer from a Revolutionary Guard account to assassinate Saudi Arabia's ambassador — by bombing a Washington restaurant? A year on it looks like the new normal. In Bangkok last month, an Iranian agent entered a courtroom in a wheelchair, having accidentally blown his legs off while fleeing police. A January alert issued by Turkish intelligence was light on specifics but quite certain the Quds operatives would be staying in five-star hotels.

"There's a number of reasons that Iranian intelligence has suffered," says Meir Javedanfar, an Iranian-born analyst who lectures at the Interdisciplinary Center in Herzliya, Israel. "No. 1," he says, "is the 2009 uprisings in Iran." The street protests over a fraudulent election undermined the perceived legitimacy of the state among people who once would work for it, including in its secret services. “People less and less see it as a nationalist endeavor and more as a Khamenei-related project to strengthen himself,” Javedanfar says, referring to Iran’s Supreme Leader Ayatullah Ali Khamenei, who by some published accounts personally authorizes all overseas attacks.

Hard-liners further aggravated the situation by purging competent reformists from both the secret services and from Iran’s embassies — crucial to a force expected to work undetected abroad. “Basically the Quds Force doesn’t cooperate with the Foreign Ministry, and the Foreign Ministry isn’t what it used to be either,” says Javedanfar. Under President Mahmoud Ahmadinejad, 42% of ministry employees have only high school degrees. “The regime is a bigger threat to itself than Israel,” he says.

Karl Vick has been TIME's Jerusalem bureau chief since 2010, covering Israel,the Palestine territories and nearby sovereignties. He worked 16 years at the Washington Post in Nairobi, Istanbul, Baghdad, Los Angeles and Rockville, MD.

Article 5.

YaleGlobal

Is the US Ready To Be Number Two?

Kishore Mahbubani

11 February 2013 -- SINGAPORE: Long before anyone did, former US president Bill Clinton saw that America would have to prepare for the time

when it would no longer be the number one power in the world. In his 2003 Yale University address on “Global Challenges,” he said:

> If you believe that maintaining power and control and absolute freedom of movement and sovereignty is important to your country’s future, there’s nothing inconsistent in that [the US continuing to behaving unilaterally]. [The US is] the biggest, most powerful country in the world now. . . . But if you believe that we should be trying to create a world with rules and partnerships and habits of behavior that we would like to live in when we’re no longer the military political economic superpower in the world, then you wouldn’t do that. It just depends on what you believe.

Long before 2003, Clinton wanted to begin preparing Americans for this new world. “Clinton believed […] what we had in the wake of the cold war was a multilateral moment – an opportunity to shape the world through our active leadership of the institutions Clinton admired and [Charles] Krauthammer disdained,” writes Strobe Talbott, former deputy secretary of state in his book The Great Experiment: The Story of Ancient Empires, Modern States, and the Quest for a Global Nation. “But Clinton kept that belief largely to himself while he was in office…. political instincts told him it would be inviting trouble to suggest that the sun would someday set on American preeminence.” Sadly, few Americans have heeded Clinton’s wisdom. Few dare to mention that America could well be number two. I discovered this when I chaired a panel on “the future of American power” at the 2012 World Economic Forum in Davos. After citing projections that America would have the second largest economy in just a few years, I asked the American panelists – two senators, a congresswoman and a former deputy national security advisor – whether Americans are ready to become number two. To my shock, none could acknowledge publically this possibility.

America may well become number two faster than anyone has anticipated. According to the most recent International Monetary Fund (IMF) projections, China will have larger share of global GDP than the United States by 2017. In 1980, in PPP terms, the US share of the global economy was 25 percent, while China’s was 2.2 percent. By 2017, the US share will decline to 17.9 percent, and China’s will rise to 18.3 percent. Even if

America becomes number two, we will still have a better world. In many ways, the world is "converging" to American values and standards, as I explain in The Great Convergence. The global middle class is booming, interstate war is waning, and never before have people traveled and communicated across the world so easily. These changes are creating common values and norms across the world. Education and scientific reasoning, for example, are enabling people the world over to speak with a common language. However, while humanity is well on its way to combating absolute poverty and interstate warfare, other problems are surfacing. Preventing and curtailing transnational issues like climate change, human and drug trafficking, and financial crises require cooperation among nation states, yet this is not happening. A simple analogy illustrates this. Before the era of modern globalization, humankind was like a flotilla of more than 100 separate boats in their separate countries. The world needed a set of rules then to ensure that the many boats did not collide and facilitate their cooperation on the high seas if they chose to do so. The 1945 rules-based order strived to do this, and despite some obvious failures, it succeeded in producing a relatively stable global order for more than 50 years. Today, the 7 billion people who inhabit planet earth no longer live in more than 100 separate boats. Instead, they live in 193 separate cabins on the same boat. But this boat has a problem. It has 193 captains and crews, each claiming exclusive responsibility for one cabin. No captain or crew cares for the boat as a whole. The world is now sailing into increasingly turbulent waters with no captain or crew at the helm. The Great Convergence echoes the themes of Clinton's 2003 Yale speech. It's in the interest of all – particularly great powers – to strengthen institutions of global governance so that we're not sailing blindly into choppy waters without a captain. The National Intelligence Council recently projected that in 2030 Asia would overtake the Western world economically, technologically and militarily. When China becomes a world superpower in a matter of decades, the United States and Europe will want to ensure that China plays by the rules.

But in order to make international organizations like the United Nations, the IMF and the World Bank more credible and effective, they must undergo serious reform. It is manifestly absurd that the West makes up 12 percent of the world's population but takes up 60 percent of UN Security Council permanent seats. It's nonsensical that the head of the IMF is always a European and the head of the World Bank is always an American as the West's share of global GDP diminishes every year. This concentration of clout in the hands of a relative few has grave implications for these institutions' effectiveness and independence, making them instruments of the West. No other organization, not even huge global NGOs like the Bill and Melinda Gates Foundation or the Clinton Foundation, has the scope and legitimacy that the UN currently enjoys. For example, the United States for years has been trying to pressure China to take a more proactive role in fighting climate change. Predictably, China has resisted these pressures because they saw them as a clever yet transparent American ruse to curtail Chinese economic growth. Only when the United Nations Development Programme raised the issue with China did the Chinese government take heed, as the UNDP is seen as a neutral party in China. The UN and its many agencies may soon lose invaluable credibility if the West insists on monopolizing its power over these institutions.

Any reform of the UN should take into account three principles: democracy, recognition of power balances and the rule of law. Institutions of global governance can be made more democratic by ensuring that their leadership accurately reflects the composition of world's population. At the same time, we must also take into account geopolitical relationships among emerging and middle powers. Finally, the rule of law is essential to the mediation and resolution of thorny international issues and to governing the conduct of states on the international stage so as to prevent escalation of conflict.

In this rapidly changing world, it's a mistake to allow institutions of global governance to stay as they are. The 1945 rules-based order is no longer appropriate for 21st century circumstances. Global leaders must better prepare us for the challenges to come and equip our international organizations to deal with them. Leaders must find the courage to continue advocating for stronger multilateral cooperation. It is time for our captains and crews to emerge from their cabins and start steering the boat.

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Article 6.

Foreign affairs

Pyongyang's Nuclear Logic

Jennifer Lind, Keir A. Lieber, and Daryl G. Press

February 14, 2013 -- In his State of the Union address, U.S. President Barack Obama described North Korea's recent nuclear test as a provocation that required a firm response. The intended audience for that provocation, though, is up for debate. Some commentators have posited that the test was a signal aimed at China, designed to demonstrate North Korea's independence from its great-power patron. Others think that Kim Jong-un was sending a message to the newly elected president of South Korea, Park Geun-hye. Still other North Korea experts have suggested that the test was actually meant for domestic consumption, to lift the sagging morale of a deprived public or for the regime to curry favor with the military. The intended North Korean signal is being analyzed and debated by U.S. government officials, who hold views across the spectrum.

A much simpler explanation exists. Pyongyang tested a nuclear device for the same reason it has been testing long-range missile designs: to see what works. In truth, the effort was less a signal than an attempt to master the technical capabilities that are vital to its nuclear deterrent.

This rationale should come as no surprise to those steeped in Cold War history. Between 1945 and 1992, the United States conducted 1,054 nuclear tests and fired an untold number of missiles. If the goal had merely been to show the Soviets that the United States meant business, testing nearly twice a month throughout the entire Cold War would have been overkill. In fact, Operation Sandstone -- a series of three tests at Enewetak Atoll in 1948 -- was not intended to warn off the Soviets as tensions rose over Berlin. Nor was the series of 48 underground tests launched in the summer of 1964 designed to impress the newly installed premier, Leonid Brezhnev. And the United States would not have conducted a dozen atomic blasts at its Nevada test site in the first half of 1977 -- including the Cove, Dofino, Marsilly, Bulkhead, Crewline, Forefoot, Carnelian, Strake, Flotost, Gruyere, Scantling, and Scupper detonations -- just because new President Jimmy Carter was vulnerable to right-wing criticism.

The United States did what it did because it needed its ultimate deterrent to actually work, and because the technical requirements of the nuclear mission continually changed. The ruins of Hiroshima and Nagasaki were evidence enough that the United States could destroy cities, but deterring the Soviet Union was a far greater challenge. If the Soviets had invaded Western Europe, for example, U.S. bombers would have had to penetrate alerted Soviet air defenses, identify Soviet ground forces and industrial centers, and attack them. Accordingly, U.S. bombers had to be highly maneuverable and able to carry multiple weapons, so the bombs themselves had to be lighter and smaller than the ones the United States used against Japan. The Soviets put another wrinkle in Washington's plans when they began to deploy large numbers of their own nuclear weapons. The United States needed to find a way to potentially destroy the Soviet arsenal on the ground. Eliminating those targets -- numerous and often hardened -- required even greater numbers of bombs, even lighter designs, and more accurate delivery systems. So the United States updated its designs and tested. And tested. And tested again.

Like the United States during the Cold War, North Korea has apparently decided that nuclear weapons are central to its national security strategy. With few friends, its conventional military forces outgunned, an economy in tatters, and facing off against a superpower prone to deposing dictatorships across the globe, the Kim regime set about building an operational nuclear arsenal. And just as NATO planned to thwart a Soviet invasion by striking targets in the Soviet Union and Eastern Europe, North Korea presumably plans to defend itself, should war erupt on the peninsula, by threatening U.S. regional allies and targets in the United States.

North Korea's mission requires small, lightweight warheads, and missiles that work -- and the only way to know that they work is to test them. So far, the weapons have proved unspectacular. The country's first nuclear test, conducted in 2006, was an embarrassment. Pyongyang had told the Chinese that the device would generate four kilotons of explosive power, but it ended up producing less than one. The second test in 2009 fared slightly better, producing between one and eight kilotons, although it is not known what size of a blast the North Koreans had sought. Moreover, Pyongyang has much more work to do before it can boast weapons that will actually fit on its missiles (which have been, themselves, a series of humiliating failures).

Observers in the West who presume that North Korea's behavior must be about signaling should remember NATO and the United States' own experience during the Cold War. The United States understood then that the ability to conduct nuclear operations was the very foundation of a credible deterrence strategy. Today, a sound strategy for dealing with North Korea should not ascribe ulterior motives to acts that the United States once considered rational and routine.

The view that nuclear weapons are merely political instruments -- suitable for sending signals, but not waging wars -- is now so common in Washington, London, and Berlin that it is hard to find anyone who disagrees. Yet those comforting assumptions are not shared by leaders everywhere. Beyond North Korea, Russia is cutting down its arsenal, modernizing the nuclear forces it plans to keep, and increasing its reliance on nuclear weapons in national defense strategy. China is slowly expanding its own arsenal, while substantially improving its weapons. And Iran seems so committed to going nuclear that it has been ready to endure crippling sanctions and risk foreign attack.

It is unfortunate that U.S. policymakers are so convinced of nuclear obsolescence that they have difficulty understanding the motivations of potential adversaries. It would be tragic, however, if their questionable assumptions prevent them from recognizing the deterrence problems that lie ahead and the grave difficulties that will be posed by adversaries, such as North Korea, that still cling to nuclear weapons.

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Article 7.

Foreign Policy in Focus (FPIF)

The Depths of Malaise in Palestine

Daniel DePetris

February 12, 2013 -- When talking about peace in Israel-Palestine, it is easy to narrow the conversation to the leaders who are responsible for making it. Over the past few years, there have been numerous profiles in newspapers and profiles in magazines attempting to document the two men who are supposed to make the effort—Israeli Prime Minister Benjamin Netanyahu and Palestinian Authority President Mahmoud Abbas.

Delving into the lives and minds of world leaders is an undoubtedly helpful, exciting, and informative way to find answers, but a conflict as multifaceted and complicated as the Israeli-Palestinian dispute cannot be fully explained without taking into account the opinions of the ordinary people who live the reality every single day. Millions of Israelis and Palestinians on both sides of the green line have had their voices drowned out by the very politicians, lawmakers, and personalities who purport to represent them.

The result is a host of unanswered questions. What does the average Israeli or Palestinian think about the chances for a lasting and comprehensive peace agreement? What types of concessions need to be given for a deal to be struck? Do Israelis have the political courage to sacrifice on settlements and Jerusalem so the conflict can finally be resolved? Can the Palestinians negotiate in good faith?

Luckily, polling organizations in Israel and Palestine have spent years trying to answer these very questions, often working together and sharing their resources during the hunt.

Two of the latest polls, one from the Jerusalem Media and Communications Center (JMCC) and the other from the Palestinian Center for Policy and Survey Research (PCPSR), are particularly telling. Unlike other surveys that confirm what most in the international community already think, the results of these polls are unprecedented, revealing a stark and disturbing malaise in the Palestinian territories.

The message is clear: frustration with the conflict is at a high point, the two-state solution is steadily losing credibility in the eyes of the people, and ordinary citizens in the Holy Land are starting to wonder whether a settlement can be achieved without another round of bloodshed.

Oslo Fatigue

When asked by the PSPSR whether Mahmoud Abbas’s policy of peace talks or armed resistance by Hamas is the best way to achieve a Palestinian state, an alarming 60 percent of Palestinians surveyed threw in their lot with armed resistance (compared to 28 percent who favored negotiations). With the eight-day Israel-Hamas war having ended with a ceasefire that many view as a victory for the Islamist group, Hamas Prime Minister Ismail Haniyeh finds his popularity having soared. Forty-eight percent of Palestinians say that they would rather pick Haniyeh as Palestine's next president instead of Abbas, who has struggled to secure the freedom of movement and self-determination that so many Palestinians once expected from his government.

The JMCC issued similar findings. By far the most disturbing figure in the poll is the exponential rise in support among the Palestinian public for armed operations against Israel—50.9 percent now view attacking Israeli positions in the current climate as a credible way to express their grievances and pressure the Israeli government to compromise. This is a 20-percent increase from the previous year.

The numbers can perhaps best be summarized by Ali Najjar, an 18-year-old Palestinian who lives in a refugee camp. "In my view," he said, "what was taken by force will only be returned by force. Twenty years after Oslo, we haven't gained one inch of Palestine."

Many young Palestinians agree. Indeed, the words summarize the how dire the situation has become for an entire generation of Palestinians, most of whom are too young to remember the signing of the Oslo Accords in 1993. Most have not seen any benefit from peace agreements or negotiations, and all of them have grown tired of the settlement construction in the West Bank, the killing of Palestinian civilians, and the internal fighting among Palestinian politicians that never seems to dissipate.

The Corrosive Status Quo

One cannot blame Palestinian civilians for feeling this way. The previous year was a terrible one for Abbas and his government. Settlement tenders and approvals in the West Bank rose to such an extent that the anti-settlement organization Peace Now named 2012 "the year of the settlement," with the Ministry of Defense authorizing an additional 6,000 housing units and Netanyahu pushing for the construction of 11,000 homes in the month of December alone.

The lack of economic support from donor nations and the restrictions that impede the Palestinian economy from functioning at anywhere near its full potential have also made for a deadly cocktail for Abbas' Palestinian Authority. Combined with the occasional holding of Palestinian tax revenue by the Israelis, the PA is finding it incredibly difficult to pay the tens of thousands of employees on its payroll.

The recent Israeli parliamentary elections perhaps best illustrate where the Palestinian issue is today: at the bottom of the barrel. Israeli politicians chose to focus their campaigning on social and economic issues, from the price of housing and cost of living to whether religious students should be drafted into the Israeli military like everyone else. The only Israeli candidate who spoke about the need to reengage the Palestinians in peace talks was the former foreign minister Tzipi Livni, whose party failed to reach double-digits in the incoming parliament.

The overall message is depressingly familiar to Palestinians: creating a Palestinian state in the West Bank, Gaza Strip, and East Jerusalem is simply not on the list of priorities for Israel at the current time. And the Palestinian Authority is proving itself to be an increasingly fragile governing body without the constant generosity of foreign countries; it's an institution that cannot adequately care for its people, let alone its employees who go months without pay. The average Palestinian is losing hope that peace is possible in his or her lifetime. Palestinian leaders may speak of ending the occupation, but for those who live under it, the occupation is so ingrained that escaping it has become a violation of the normal.

Some may take the more militant attitudes of Palestinians as confirmation that Israel does not have a partner for peace. Yet those attitudes can also be viewed differently: without a renewed effort at peacemaking, however frustrating and difficult it will be, the conflict will reach a nadir where searching for a peace partner will be irrelevant.

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this sounds like an internal discipline matter rather than Title IX. \n\nGoing into court this morning but can focus/reflect
more on this after I emerge (around noon Central).\n\nDoing great! Hope you are as well.\n\nBreakers at Thanksgiving.
Where will Jeffrey be?\n\nSent from my iPhone\n\nOn Aug 24, 2017, at 5:24 AM, jeffrey E. <jeevacation@gmail.com>
wrote:\n\n> Lawrence Krauss , professor at Arizona , says office of diversity contacts him saying a third party , said you
inappropriatly touched another person in AUSTRAILIA after a Skeptics type event.   They asked him to sign a paper
saying he received notice of the investigation, any statments made could not be used in a court to incriminate him . and if
he didnt sign or agree , he was open to disciplinary action.   He was concerced that an investigation will now always be
part of his file. .   he was going to meet the title nine woman today.   does he bring a lawyer. does he record the meeting ,
does he say , he will say nothing but is willng to listen ?   not a good environment nowadays.   how are you?\n>\n> On
Thu, Aug 24, 2017 at 5:56 AM, Starr, Ken <Ken_Starr@baylor.edu> wrote:\n>\n>   No. Emphatically not if the victim
is not a student. What's the student-status, if any, of the \"victim?\" \n>\n>   Hugs, Ken\n>\n>   Sent from my
iPhone\n>\n>   On Aug 24, 2017, at 4:48 AM, jeffrey E. <jeevacation@gmail.com> wrote:\n>\n>>   A professor friend
is told by title nine person that a third party filed a complaint alleging inappropriate touching of a person , not the third
party , at a bar in another country by the professor after he gave a lecture for money to an unrelated organization .
Jurisdiction?\n>>
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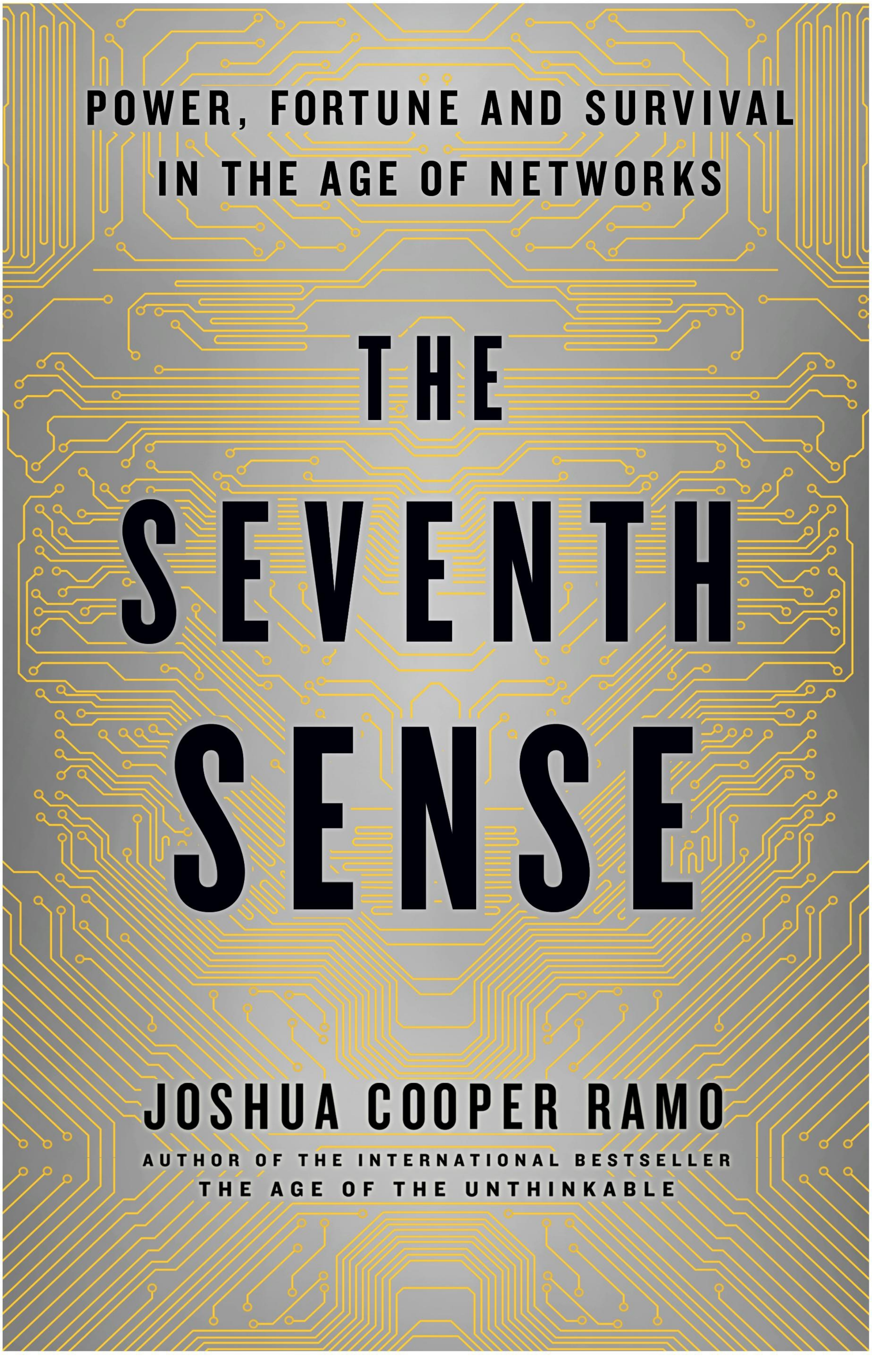

POWER, FORTUNE AND SURVIVAL IN THE AGE OF NETWORKS

THE SEVENTH SENSE

JOSHUA COOPER RAMO

AUTHOR OF THE INTERNATIONAL BESTSELLER
THE AGE OF THE UNTHINKABLE

The Seventh Sense
Power, Fortune and Survival in the Age of Networks

Joshua Cooper Ramo

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Part One: The Nature of Our Age

In which the revolutionary character of our era is explained. The need for a new instinct is introduced. The historical stakes are weighed.

Chapter 1: The Master
Chapter 2: The Age of Network Power
Chapter 3: The Unbuckling

Part Two: The Seventh Sense

In which we regard the world with a new sensibility. Connection, we discover, changes the nature of an object.

Chapter 4: The Jaws of Connection
Chapter 5: Fishnet
Chapter 6: Warez Dudes
Chapter 7: The New Caste
Chapter 8: "A mechanism and a myth": The Compression of Space and Time

Part Three: Gateland

A guide to power in the world that becomes newly apparent with the Seventh Sense.

Chapter 9: Inside and Out
Chapter 10: Defense in Depth
Chapter 11: Citizens!

Preface

Three hundred years ago the Enlightenment and the Industrial Revolution began their pounding work on the foundations of an ancient order. Like twin hammers, these forces demolished most of what once seemed permanent: Kings, alchemists, popes, feudal lords – they were all undone.

Today, a fresh hammer is cracking away at our world. The demands of constant, instant connection are tearing at old power arrangements. The formation of networks of all kinds, for trade and biology and finance and warfare and any of a thousand varied needs, is producing new and still dimly understood sources of power. They are eroding the roots of an older order even as a new one is beginning to appear. In fact, this process is only beginning. The networks ahead of us will be even faster than those we have today. They will also be informed by artificial intelligence. The combination of these two forces – instantness and thinking machines – will further deepen an already profound change.

That last great shift of the Enlightenment was a violent and wonderful transformation. It produced winners and losers, triggered tragedy and lit fresh triumphs. What lies ahead of us is the same. A new landscape of power is emerging now. This book is its story, and the tale of the instinct that will divide those who master it from those who will be mastered by it.

Part One: The Nature of Our Age

Chapter One:
The Masters

In which the immortal problems of power are discussed, and the possibility of a new instinct is introduced.

1.

One morning in of 1943, a Chinese writer named Nan Huai-Chin packed his bags in Shanghai and began walking out of the city. He was headed west, and traced a route along the Huang Pu river, as he headed out towards E'Mei Shan several thousand miles away in Western China. E'Mei Shan – Eyebrow Mountain – was and is one of the holiest Buddhist sites in China.

Nan was an unusual young man. At fifteen, he had won a national sword fighting competition against men twice his age. At sixteen he had been admitted to the best university in Shanghai, where he excelled in the study of natural sciences and philosophy. If you look at photos of Nan in those years, more or less at the moment he left Shanghai for the mountains, you see a clean-shaven, and soft-skinned man. He is handsome, with electric eyes. You can see, if you know to look, the rough intensity of the man he'd become during the anti-Japanese war: A toughness in his stance; some hint too in his grimace of a sword-fighter's mercilessness. This was long before Nan was regarded as one of the finest living exemplars of the Chinese Buddhist tradition, before he became known as *Master* Nan. This was before his flight from China with the Kuomintang in 1949 once the communists came to power, before his decades of wandering, and his eventual return to the mainland. All that lies ahead of the man you see in the photo. The man in the photo is young, energetic. He is certain.

In Nan's youth, in his early sword fighting days, he had come to understand that mastering the blade of his sword involved really training his internal spirit to the highest possible level of sharpness. The spirit moved first, then – instants later – the sword. It was his desire to sharpen that inner blade that led him to E'mei Shan and the study of Ch'an Buddhism. Ch'an – you may know it by its Japanese name, Zen – is the steeliest of the Buddhist traditions, bred through the combination of the Buddha's ancient Indian teachings with the mystical philosophical habits of Chinese Daoism. Its adherents explain that enlightenment in Ch'an demands concentration strong enough to make and then smash diamonds. It produces, as a result, an unmatchable form of enlightenment. So, with the anti-Japanese war still smoldering, Nan traveled for a month through his convulsing country and up E'mei Mountain, where he found a Ch'an lamasery near the peak. Once there, during three years of constant effort and meditation and deprivation, he achieved a breakthrough to *samadhi,* that state of spiritual alignment in which the world and your own soul become as transparent as water. Fear vanishes, as does lust or any real confusion about the deeper currents of life. You become, the priests like to say, as resilient as a natural mountain spring: No matter what mud is thrown in, it is simply and naturally bubbled away into clarity.

From E'Mei temple, with this fresh, clear-running mind, Nan began a quest to sharpen his spirit even further. The journey took him, for nearly a decade, from master to master in China, from monastery to university to rural huts. These were the places where the last bits of some of China's most ancient traditions had been carried, places where classical wisdom had survived a hundred years of national chaos. Nan's wandering education resembled the way in which, in millennia past, monks would make spiritual marathons around China, seeking an ever-sharper edge to their insights. Solitary monks would stride into packed monasteries and engage in tests of insight, contests to see who could feel the underlying nature of the world with greater fidelity. The aim was, always, to touch the energy flows moving, just unseen, below our lives. "Ten thousand kinds of clever talk—how can they be as good as reality?" So the famous Ch'an master Yun Men, who himself trained four great masters, faced down a King with pure silence in one such a battle.[1]

Nan was trying to cultivate in himself deep ways of feeling and sensing the world. During his wandering study, he followed a path that would lead him to enlightenment in more than a dozen different schools of Buddhism. He mastered everything from medicine to calligraphy. His youthful success and energy at sword fighting, it emerged, was a sign of a prodigal genius. He became, in the 20th century, recognized as one of those crucial human vessels by which really ancient tradition is preserved and carried forward for new generations.

After a few years of study, Nan saw the descending madness of Mao's China and slipped out of the mainland for Taiwan. He lived for decades between Taipei and Hong Kong and America. During this time his fame as a teacher grew. In the mid-1990s as China opened, Nan returned to the mainland. He had been invited by some of China's most powerful families, the children of communist revolutionaries who were groping for a sense of history and identity. They wanted to absorb the lessons of Chinese culture that Nan had internalized, they hoped to bend them into tools they could use to shape a Chinese future. Might the old habits of the country, with their ancient roots, have something to offer a nation nearly splitting with the energies of modernity? Nan agreed to set up a private school. He selected a site on the shores of Lake Tai in Zhejiang Province, not far from Shanghai. He chose the location carefully: The still lake water near his campus was like a giant bath of calming *yin* energy that balanced the urgent, uncertainly aggressive *yang* energy of 1990s China into a kind of harmony. Ash trees shaded the study rooms in the summer. Wild peonies erupted in pink and white each spring.

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[1] **So the famous Ch'an master**: "Yun Men's Every Day is a Good Day" in Thomas Cleary*, Secrets of the Blue Cliff Record: Zen Comments by Hakuin and Tenkei.* (Boston, Mass.: Shambhala, 2002) 39. Fir an excellent introduction to the thinking of Master Nan, see *Diamond Sutra Explained* (Primodia Media 2007) and *To Realize Enlightenment: Practice of the Cultivation Path* (York Beach, ME: S. Weiser, 1994)

It was here, when he was 92 years old, that I first came to know him.

2.

Before I moved to Beijing in 2002 a friend took me aside and offered this thought: "Your life in China will change the way you see the world. But if you want to get the most out of it, you have to understand that as important as being bilingual is, it is as important to be bicultural." I had not honestly thought of this as part of my plan, but it seemed like good advice. I have hewed to it as a personal law ever since. From my first days in China, I lived almost entirely among the Chinese. I can, for instance, nearly number on one hand the meals I shared with Westerners over my years there. This advice to learn to be bicultural really did change my experience of living in China. It changed how I saw the world. It presented moments of really honest and searching confusion. I had conversations where I understood every word and yet had no idea what my interlocutor meant. I had periods where I did not know which culture was pulling on my mind. But the decision produced, at least, a fortunate encounter that led me to Master Nan's school.

Several years after I arrived in Beijing, I was out for dinner one evening with a close Chinese friend. My friend is a remarkable woman. If you ask how China has gone from poverty to prosperity in record time, it is partly because of people like her. She had studied in the Chinese educational system, had moved overseas and mastered the technical arts of economics and finance, and had returned eagerly to help in the construction of modern post-reform China. Nearly any time the government had some new and difficult financial problem to manage, she would be shuffled into the nervous hands of some baffled Minister or Vice Premier. She had, in her various activities, helped put the Chinese stock exchange on its feet, rebuilt bankrupt banks, and had overseen the construction of China's first sovereign wealth fund. Though only a few years older than me, her unique skills and absolute loyalty meant she had seen much of the development of China's speed-train economy – part miracle, part near accident – from zero-distance range.

As she and I were finishing dinner that evening, a door opened to a private dining room near us in the restaurant. Chinese often eat out in private rooms, and the best restaurants are usually warrens of well-appointed secret spaces, a reminder that in China door after door after door leads to ever more secure sanctums—think of the nested power architecture of the Forbidden City. When the door near us opened, a stream of senior Chinese party figures paraded past, hovering around an intense, square-jawed and smiling man who was soon to become one of the most powerful figures in China. As this man walked past, he nodded hello to both of us. I asked my friend once he had left: "How do you know him?" I expected her contact with senior leaders on financial matters would explain the connection. Her answer surprised me.

"We both," she said, "have the same Master."

I had only been living in China then for about four or five years, so I was still a bit surprised to learn in this unusual way about what I would later come to know – and see and even experience myself – as the spiritual life of China's communist officials, particularly those at the absolute top of the system. The Master my friend was referring to was Master Nan. Though he was largely unknown outside of China – I am sure you had not heard of him until a few pages ago – in China he was an icon. After his return to the mainland in the 1990s, his books about Buddhism and philosophy sold millions of copies. His lectures are watched on DVDs and the Internet, and he owns a fond fame that reaches across generations and transcends politics or art or philosophy. You are as likely to find a copy of his book on the desk of a university President as stuffed into the back pocket of a tea-server in Chengdu.

As you can imagine, when my friend first introduced me to the idea of someone like Master Nan serving as a spiritual mentor to the figures struggling to master this huge country, figures I had met and worked with in the brutally rational business of everyday life in a modernizing China, it raised all sorts of questions. *We both have the same master?* But in China, one thing you discover pretty quickly is that honest understanding of anything isn't achieved by asking lots of questions, particularly not the direct sort. Yun Men had it right: Ten thousand kinds of clever talk get you nowhere meaningful. But with her one sentence, the dinner conversation, which had been moving pleasantly enough through the eddies of China's politics and economics, passed into deeper water, where it has stayed in the years since.

Master Nan's particular passion, I learned that night, was a branch of Chinese Ch'an Buddhism that had, about 1000 years ago, provided the seeds for the Japanese school of "instant illumination," known as Rinzai Zen. Rinzai is famed in the west for asking students to grapple with *koans*, the sorts of puzzles – "What was your face before your were born?" or "What is the sound of one hand clapping?" or just "Mu!" – that can never be approached or answered by reason alone. They require nothing but pure, trained instinct. Koans are not like math problems or word puzzles, so much as questions that have to be answered with your whole soul. We don't really have an educational concept like this in the west, but the aim of Rinzai meditation and learning is to arrive at *kensho (jianxing* in Chinese), a sudden and complete understanding of the true nature of the world. Such "instant illumination" marks a very eastern sensibility: Real truth resists the grasp of mere logic. It can't be simply explained, or taught with words alone. It calls on more immediate feelings, in the way we might fall in love or get angry. In Rinzai study, the aim is to tighten and compress your mind with meditation and focus and exercise – and the occasional slapping sharpness of a hardwood "enlightenment stick" – as a way to open it, with the goal of instant, blazing enlightenment. In such a moment, all sorts of invisible relations become unforgettably obvious.

I had been a student of Rinzai since I was 16. So it was that, in the springtime of the year after that dinner in Beijing, I was surprisingly, luckily invited to Master Nan's campus.

3.

It is often said that during the days when Master Nan's Lake Tai campus is open for training, when hundreds of rich and connected elites from all over the Chinese-speaking world converge there, it is the best networking spot in the country. But on the weekend of my first visit, the Tai Hu center was closed to outsiders. Only about ten of us were present. We were all, together, students. On our first morning we walked to a large hall overlooking the lake and sat down quietly on benches and meditated for three hours. And on our first evening, Master Nan sat with us during dinner, looking young and vital and 20 years short of his 92, barely eating. Above the bridge of his nose, I noticed, was a small marble-sized bump. This is the mark that emerges, according to Buddhist tradition, when your self-cultivation and meditation has led you to deep breakthrough, when energy begins to slip out of your head at that "third eye" spot and into the world, leaving a little bump as evidence.

As we finished dinner, Master Nan turned the conversation to me and asked me to speak about what was on my mind. In later years I would learn this was his habit, to hand the floor over to his guests for a bit – whether they were politicians or industrial titans or innocent visitors – before entering into his own reflections. He pursued me with careful questions, his voice purring with a thick coastal accent. The questions seemed removed sometimes from my main points, but I quickly came to see them as needles. ("When he uttered a phrase," it was said of Yun Men, "it was like an iron spike.") Many of those present were jotting notes: Whatever Master Nan thought important, his students felt, must be worth putting down.

I knew that the records of Nan's lectures and discussions were often circulated by email. With subject lines like "Understanding This Chinese Generation" or "Master Nan Answers Questions About Chinese and Western Knowledge," they were real-time maps of the usually invisible dance our daily lives do with history and philosophy. We live *now*, of course, but Nan was always aware that we lived within an historical flow too, in a particular moment amidst constant change. Remember that the foundational text of Chinese civilization is the 2500-year old *Yi Jing*, The Book of Changes. If Westerners are accustomed to consistent historical, Chinese begin with the idea of a flux of forces as the only constant. A world of ceaseless change means that valuable, useful education is less about facts than about the training of a vigilant instinct for reaction.[2] It was a version of this same aim that was at the heart of Nan's teaching, and that made his ideas so magnetically appealing.

The circulation lists on his lecture notes were the Chinese equivalent of a roster that included Ben Bernanke, Colin Powell, and Warren Buffett. They reflected the breadth of curiosity about his ideas, and the hunger to understand and digest changes in China and the world. "I just had a very senior leader here," Nan told me during a visit several years later. I had seen the high security at the compound and the military cars whipping in and out all day. “He asked me what books I could recommend to understand this period we are living in. I said, ‘I could give you some books, but you wouldn’t understand them.’” Nan laughed. The iron spike. “This can’t be understood by reading!” Nan was trying to educate his students in the original principles of Ch’an: a set of psychological and physical tools to reveal deeper patterns in the world.

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[2] **A world of ceaslesee change:** See Francois Jullien, *The Silent Tranformations* (London: Seagull Books, 2011) 70, and David Hall and Roger T. Ames, *Thinking from the Han Self, Truth, and Transcendence in Chinese and Western Culture* (Albany, N.Y.: State University of New York Press, 1998) 150

4.

After wearing his guests down with relentless dinner-time questioning that first night I was at Lake Tai, Master Nan began to offer his views of our age. What he saw, he explained, was a world pressing too hard on a fault line. We faced, he said, choosing his word carefully, an “ephocal” quake. We were at a moment when the river of change he had spent a lifetime feeling out was about to shift its course over the landscape, drowning many of the reliable, old routes. The origins of this change were buried in the very things we hoped might, in fact, save us from shock: money, information, speed. “People are now constantly connected to computers and machines, and this is changing the way they think. People just cannot make sense of what is happening,” he said. “There is no respite. The world is going to go faster and faster in this regard.”

“In the 19th century the biggest threat to humanity was pneumonia,” he continued. “In the 20th century it was cancer. The illness that will mark our era, and particularly the start of the 21st century, is insanity. Or we can say, *spiritual disease*.” He paused. “This next century is going to be especially turbulent. It has already begun. And when I say insanity and spiritual disease, I don’t only mean inside the minds of individuals. Politics, military, economics, education, culture and medicine – all these will be affected.”

I could sense the logic behind Master Nan’s argument. The industrialization and urbanization of the 19th century had packed much of the world into Dickensian urban pits. These became petri dishes for pneumonia. Too much industry and urbanization, too fast. The 20th century of plastics and artificial, untested, unsafe materials had torn away at our genetic base and worsened cancers. Too much science, too fast. In our age, in the 21st century he felt a wasting disease would be carried by information, by cell phones, by packets of data, by every bitstream we jacked into our lives – and it would go right for our brains. Our institutions and our ideas about power and stability would fall apart. The remapping of force that the information revolution represented was a profound, destructive shift – what Nan called a *jieshu*, the Chinese word for a rupture in the fabric of human history. In such an era, the once reliable old habits would become useless, even dangerous. All that would matter were your instincts. Frankly, all you would have would be your instincts because no existing map could guide you through a completely new landscape. In fact, the existing maps, should you stubbornly continue to use them, would lead you along dangerous paths towards catastrophes you could not even imagine.

5.

The dining hall around us was dark as Nan finished his discussion that night. At our table we sat in a pool of dim light and waited on the Master as he considered his next thoughts. I knew that some of what drew China's great minds here to dinners with him was a sense that those old ideas of Chinese philosophy – born in an age of chaos and dating back to a time before rational calculation and scientific progress – offered hope. I asked Master Nan where he would begin on a quest to understand this age and how best to prepare. How to cultivate oneself?

"You know you can't just understand this easily," Master Nan said sharply. He was a little angry with me, I could see, for asking such a direct question – and he was also using the Chinese teaching technique of taking students through a range of emotions to accelerate their learning. Chinese philosophers believe we learn differently depending on how we feel, so a teacher making a student scared or insulted or proud is often just an educational tactic. Nan was working on my humiliation bone now: "This isn't like some idea I can *sell* you and then you can just go and use," he continued, his voice rising. "This is going to be hard."

Master Nan inhaled on his cigarette and waited a moment. "If you work, though, maybe you can be like Su Qin," he said, "the man who wrestled 20 years of peace out of 300 years of war." Su Qin was the hero of the Warring States period during which China collapsed into total chaos. He is remembered today, two thousand years later, for the way he had penetrated the madness of his age and how he found there deeper fibers of truth that he lashed into a stable peace. "Su Qin started as an idealist. He failed.

"You know, Su Qin was humiliated in trying to advise kings. Even his kin were embarrassed. His sister and mother refused to let him return to the family home. He was in so much pain over this embarrassment that he sat in front of a desk and read every book of history he could find for seven years. He tied his long hair to a beam above his desk so that if he fell asleep it would hold his head up. Sometimes he would stab a knife into his thigh to keep awake." Nan's voice was rising, his speech picking up pace. "But in the end, he learned. Su Qin learned. You should study him. If you do this, if you are sincere, if you work hard, if you learn these ideas, you can understand. Can you be that disciplined?" The room was dead quiet now. No one looked at me. In the silence, one of the guests passed around a plate of cut fresh fruit and cherries and sweet dried dates.

Nan's relentless, intense Ch'an Buddhism sort of enlightenment, delivered only after painful years of carbon-crushing intellectual intensity, expressed a clear ambition: To learn to feel through invisible relations and balances and to construct something promising and hopeful on the other side. Nan's long sessions of mediation or sword play, his furious pursuing philosophical dialogues that reduced students to an embarrassed sweating state, these were all aimed at sharpening a blade so as to instantly carve at the energy flows of our age. Did "spiritual illness" really linger ahead of us? What sort of tragedy did that suggest? What was it that, hair tied to the ceiling, penknife jabbed into his leg, Su Qin had learned in those long, effortful years of study? What secret had he penetrated? What sort of education had he finally received at the end of his humiliations and breakthroughs? He had mastered the energy of his age – and the exact right sensibility to use it. Might we, Nan seemed to be asking, do the same?

7.

Faced with the mad unsettling of his world during the Industrial Revolution of the mid 19th century, the German philosopher Friederich Nietzsche once mused that survival and greatness would depend on having what he called a "Sixth Sense", by which he meant a feeling for history. Surely, he felt, an instinct for ancient balances and truths would provide a guide rail of sorts as the world lurched into a new age, along an uncharted road.[3] If you could say "This has happened before" or "This is how we got to where we are," Nietzsche believed, it was the first step towards knowing where to go next. Nan and Kissinger knew the need for something else for our age as well, for a different instinct. It wasn't just about knowing your history or feeling the real possibility of human progress or tragedy. Rather it was about feeling out the roots of the present in a certain way. All of our ideas – from how we love to what we think of politics – are taken from the feedback and experience of our lives, from what we've seen and done and felt and learned. We are the sum total of our experiences, in this sense. But what to do if changes happen at some deeper, insensible level where the old ideas and instincts, where the tools of sight and smell, of feel and taste and hearing don't fully answer? What to do when we are confronted with what we've never experienced before? Never even dreamed of, perhaps?

This book is the story of a completely fresh way of feeling our world. By this I mean a sensation that is as newborn as the lively sense of connection, of freedom, of electric uncertainty and hope that come with the knowledge that we are unboxing a new age. If Nietzsche's era demanded a feeling for history, our own age insists on a sensation alive to the pull of constant, instant connection. This Seventh Sense reacts to what none of our other senses can notice, to the subtle undercurrents of a networked age. That moment of first connection you once had – to a computer, a friend, a fast-moving financial product, a miracle medical cure, an idea, a smashed up sound – is like the first time you looked at a Matisse painting or heard Beethoven (or Orbital). It switched on a new sensibility. But you have probably had – or will shortly – another moment. This is the instant a cold and creeping chill hits you, started by the uneasy sensation that something you've done has been recorded or predicted or watched and manipulated in some way you'd not quite imagined. That some strange force from a great distance has slammed into your life. This feeling is the sudden shudder of a bill come surprisingly due: You wanted to be connected? Okay, here's the cost. And the addition on both sides of the ledger, the massive benefits of our links and the rather terrible potential of those same threads, is still being settled. We can say at least that the sum of all the revolutions wrought by the instant mingling of the world's soon-to-be connected billions with each other and with machine intelligence, biological innovation and the tremors of a globalizing world will be, to use Master Nan's word, "epochal."

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[3] **Surely, he felt**: Nietzche describes the "Sixth Sense" in *Beyond Good and Evil* in the following way: "The historical sense (or the capacity for divining quickly the order of rank of the evaluations according to which a people, a society, a human being has lived, the 'divinatory instinct' for the relationships of these evaluations, for the relation of the authority of values to the authority of effective forces): this historical sense, to which we Europeans lay claim as our specialty, has come to us in the wake of the mad and fascinating semi-barbarism into which Europe has been plunged through the democratic mingling of classes and races—only the nineteenth century knows this sense, as its sixth sense. The past of every form and mode of life, of cultures that formerly lay close beside or on top of one another, streams into us "modern souls" thanks to this mingling, our instincts now run back in all directions, we ourselves are a kind of chaos. In the end, as I said before, 'the spirit' perceives its advantage in all this." See Friedrich Wilhelm Nietzsche and Rolf Horstmann. *Beyond Good and Evil Prelude to a Philosophy of the Future*, (Cambridge: Cambridge University Press, 2002), 224.

Most of us find ourselves torn now. Not just between future and past; not merely between the habits and loves of a slower age and the ceaslesss promise of something fast and new. We are trapped, as well, between two groups. An older generation now in power, blind to the laws of networks and connection, uses old ideas to battle problems of a connected age and makes them worse, ever faster. Terrorism. Financial chasms. Environmental imbalance. At the same time, an emergent class of powerful technologists fingers more influence than perhaps any group in history. Machines watch, learn, think and increasingly control nearly every element of our lives. This digital-age group understands networks; but if they have ideas about virtue, philosophy and justice, (mostly they don't) these feel susbsumed by their confidence in networks and control. Each group pulls at the legacy of the Enlightenment – our liberty. And, so far, we've no way of defending ourselves. No new instinct for life in this still unfathomable age of connection. The Seventh Sense is a feeling for just what constant connection means – and the start of (finally) a confident knowledge of how to construct our future and protect ourselves against what is even now descending upon us. A consciouness exists in the world, Master Nan would say. It extends over borders, across differences, between people. And it becomes, on networks now, visible in new, powerful and hopeful ways.

What I mean by a sensibility is really a kind of instinctive notion, a way to sense and then use the energy flows of our age that hovers perhaps just below what the rational mind alone can tell. Master Nan used to recall a famous story from the 2500 year old Daoist masterpiece *Zhuangzi*, about the butcher who worked for a famous and powerful Duke. One day the Duke saw the butcher cutting meat, his blade singing and moving with almost no effort. "Ah, this is marvelous. Imagine such mastery," the Duke said. "How have you achived this?" he asked. "What I follow is The Way," the butcher said, referring to the idea of a spiritual force, a natural energy which Daoisim tells us infuses everthing, from trees to the human heart. "When I started butchering, all I could see was parts of the ox itself. After three years, I could see the the whole ox. Nowadays, I meet the ox with my mind and spirit rather than see it."[4] The butcher was not looking at his work; he was feeling the energy of the task. "A good cook goes through a knife in a year, because he cuts," the butcher concluded. "An average cook goes through a knife in a month, because he hacks. I have used this knife for nineteen years. It has butchered thousands of oxen, But the blade is still like it's newly sharpened." He was cutting not with his knife, but with an instinct – and the result was the highest form of mastery: accomplishment with nearly no effort. This our our aim: To see the world with our mind, not our eyes. So much of what will affect us in the future is invisibly stashed on a connected landscape we're only now learning to feel. It will emerge from the complex, adaptive sea of links expanding around us. We must tune our own instincts for this power, which will make our moves almost effortless. The ever-sharp mental knife laid upon the thick challenges of a new age.

There will be moments ahead for all of us – the most dangerous or terrifying or wonderful ones – in which things will happen that none of our old ideas or senses can help us understand. The truly *new*. We've had previews of such moments often enough in recent years: innovative devices, surprise attacks, unexpected and permanent economic quakes. A cracking of the old physics of wealth and power is underway around us, largely invisible to most of us, except perhaps in its strange and unnatural effects: everywhere terror, instant billionaries, the failure of ideas and institutions, millions of migrants loosed and drifting across old borders, but tethered to deeper fields of connection, data, and ideology. The Seventh Sense is the ability to see why this is happening. And to use what you see. This is not merely about brain power or sharpened intellect; it's about a gut reaction. Just as the demand for liberty or industry was once invisible and insensible to an age accustomed hundreds of years ago to feudal, agricultural habits, so we're likely blind to urgent pressures of our own. Surely you've felt this creeping anxiety yourself, the exciting nausea of movement coming from you know not where? The ability to sense and feel the deeper chord changes of history has, always, been the decisive mark of leadership and success in revolutionary periods.

Consider, for instance, Charles, the Duke of Brunswick-Wolfenbuttel who faced down Napoleon on the fields of Jena in what is now central Germany in October 1806. Brusnwick-Wolfenbuttel was then 71 years old. He was considered one of the most courageous soldiers of his age, with a record of astonishing victories. He looked over the sun-dappled fields along the Saar river on that fall day and saw nearly certain victory in the coming battle. He had Napoleon outmatched two soldiers to one. His men were masters of the subtle techniques of Frederick the Great, tactics that had delivered victory in far more perilous moments. But Napoleon, less than half the Duke's age at 37, stared across the same undulating land, the same poised armies and saw in the landscape something completely different and totally, lethally correct: An interlocking set of murderous gears that could be set loose by his artillery[5].

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[4] **When I started butchering**: I've finessed the always-unstranslatable Zhuangzi. See for reference Burton Watson, Burton, *The Complete Works of Chuang Tzu*. (New York: Columbia University Press, 1968)

In the course of the French victory the next day Brunswick-Wolfenbuttel was first blinded by French musket shot and then bled to death. It was a poetic end. He had been, like so many of the Generals who would tumble before Napoleon in coming years, absolutely blind to forces perfectly clear and visible and usable to the revolutionary upstart. Napoloen's European opponents would come to fear and admire nothing so much as the Emperor's specific, almosty mystical sort of battlefield vision. He could look at a battlefield and see possibilities – certanties, in fact – that eluded older, famous men. They named his masterful insight the "Coup d'Oeil": an instant, apprehending glimpse of power waves[6]. He saw forces and facts in war that were obscured from his enemies by their own habits of mind and the limits of their creativity. The great Prussian military strategist Carl Von Clausewitz, who was made prisoner by Napoleon during the massacre at Jena, used his time locked up to begin compiling notes for his classic work of Western strategy, *On War*. "Genius," he later wrote, "rises above the rules." Mastery of strategy, Von Clausewitz explained, was not merely the result of steely courage, geometric calculation or even luck, as earlier writers had figured it. Rather, it was derived from the ownership of a sensibility that could discern the secretly running lines of power that made the old ways instantly irrelevant and appallingly dangerous.

Historians who mark out and consider the really long, century by century movement of humanity, often divide time into "historic" eras where fundamental, tsunami-like changes wipe clean old orders and other, more sedate periods where time dawdles like a quiet lake. This is the difference between living in Warsaw in, say, 1339 or 1939. The first period was sober and silent; the second was awfully awake. Historic moments like 1939 are marked by the fact that change comes to find you. It is often unavoidable. Your children are pulled into a World War. Your village is torn down. Your health is remade by science. The paleontologist Stephen Jay Gould called the march of these snapping changes "punctuated equilibrium," as the world is jumped from one state to another – and never turns back. He was largely considering the extinction of the dinosaurs, but we find the idea useful in thinking about history too. The Revolution of 1789 in France, for instance, which enabled the massive, volunteer armies Napoleon later brought to his wars, which were of unprecedented size. "Looking at the situation in this conventional manner, people at first expected to have to deal only with a seriously weakened French army," Von Clausewitz explained later. "But in 1793 a force appeared that beggared all imagination."[7] The

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[5] **An interlocking set of gears:** David Chandler, *The Campaigns of Napoleon* (New York: Macmillan Publishing, 1974), 464; For a discussion of this generational mismatch, see the essay "戴旭：从文化层兴衰面反思大国军事兴衰"or Dai Xu, "Reconsidering the military aspect of great power rise and fall from a cultural perspective" PLA Daily, June 8, 2015

[6] **They named his masterful insight:** Carl von Clausewitz, Howard, Michael, trans. *Clausewitz On War*, (Washington: Library of Congress, 1998) 102

[7] **But in 1793:** *On War*, p 591 (1984)

European riots of 1848 were another such example. Or the ideological and military surging of 1939. Our very own age. There is a feeling of this sort of inevitable punctuation in what is underway around us now, the insertion of a single period at the end of one era and the first, italicized letters of a new one. Impulses and connections we don't fully understand and can't yet control are at play. Our imagination is beggared too now. Often. These forces are, we have to confess, wiping away one system. But they are also producing another.

What I mean by the Seventh Sense is the ability to see both these old and the new worlds around us, to feel too the real and the virtual – and to know power as it flows through and between each. Rattling one apart. Enlivening another. I don't mean here blinding technological optimism; nor do I mean absurd conservative historicism. The Seventh Sense is the ability to contemplate politics, economics, warfare, innovation, genomics now – really every hot-connected discipline and sense in one glance the new and the old power, and of course the fault lines running between them. Connected and yet-to-be-linked. Colliding. Melding. Repelling. Our future will be less an isolated technological paradise than an intermingling of real and virtual. It will not be an age of blacked-out virtual reality goggles like Oculus Rift or the blinding and submersive feeling of novels like *Ready Player One* but, I think, a bit more like a semi-transparent screen, on which real and virtual worlds mash together. Hololens or Magic Leap glasses that project virtual images on the real world, for instance. Or the feeling of *Snowcrash*, Neal Stephenson's masterpiece novel whose charaters move effortlessly between net and city. Maybe even (probably most accurately) the game *Ingress*, in which the reality of streets and buildings and homes was augmented into a giant chessboard and populated by hundreds of thousands of us in the last few years. These cultural landmarks matter, they are worth learning about and exploring. They stand out as trailguides to a fresh sensibility in the same way Nijinsky's 20th century dances or Goethe's 19th century poetry once did.

We flip back and forth between real and virtual in our every day lives now, popping our head from screen to street. Our art, our music, our finances – they make the same passage. To see both fields at once, to see the way they blend and pull on each other, does demand a new sensibility, of course. And though, eventually, this new instinct will be commonplace, for now at least it must be defined, refined, and learned by each of us. Like Napoleon looking at a battlfield and discovering how to spot the violent potential of industrial war. Or, Einstein reaching the deeper, invisible truths of physics as he left Newton behind: "There is no logical path to these laws," he wrote later of the leaps that had carried him to relativity, "only intuition."[8] This is what Nan was trying to point to; the need to train an instinct for the epochal changes ahead. Whether the future that emerges from our simultaneous confrontation with real and network phenomenae will produce a speed-blasted information paradise or a terrifying dystopia is hard to say now. That will be decided largely by choices made in the next couple of decades. It will be decided by people who do have the Seventh Sense. Even, I think, by people who are reading this book.

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[8] **Or, Einstein:** Einstein, Albert, *Essays in Science* (New York: Philosophical Library, 1934), 4

Why start this journey into the churning, still-confusing and affronting world around us now by the shores of Lake Taihu? Why begin with the sentiments of a slower culture that Master Nan embodied, passed like delicate and still-warm tea, with so much calm in the face of all this urgency? It's not only because of Master Nan's insight that this world is tearing at our minds, that the faster we move the sicker we'll get. It's something else. The training of an instinct, of a really fresh way of looking at the world, demands a kind of calm. Understanding of anything, after all, is most durably assembled in slow conversations, in patient probing. It is developed as much from brushes with music and literature as it is from any direct, slamming confrontation with the truth. The birth of an instinct requires a rewiring of our minds, a reframing of our hopes, and this can only be done at the pace of contemplation. (It's the best way to keep the fear at bay.) We seek those stilled, freeze-framed moments where we'll pause amid lightspeed fast networks to think about why they work and just what they are doing to us. Tranquility, for a moment at least, in the face of the alternately horrible and wonderful way the world is being remade. That's what you'll get here, in the following pages. Nan's model statesman Su Qin, knife stabbed into his own thigh and slouched with exhaustion is a sort of totem for us. *Knife in thigh*. Stop. Think. Even, hard as it may be, *wait* for the right path to present itself. No matter how uncomfortable it may be at times, it is better to be unconventional than conventional in our revolutionary age. This is the only way to cultivate a Seventh Sense. The old methods will not teach you a new way.

Let me tell you what is going to happen: In coming years there will be a struggle between those who have the Seventh Sense – who are born with it or trained to it – and those who don't. New, network forces all around us will take on old, established ones – they already are – in business, politics, warfare, science. Then – because those who don't have the Seventh Sense for network power will lose, as anyone who tries to stop the future always loses – a new age will begin. This age will involve violent, historic wrestling between different groups with different versions of the Seventh Sense.Competing interests and ideals and aims will fire these contending forces. Networks will fight networks. Some of the plans of these connected age groups will be good, others evil, and anyhow the winners will be ruthless. Then, and this is where it will get particularly strange and incredible, there will be a battle between those with the Seventh Sense and the very systems of connection, machines and intelligence they have built. Human instincts laid in competition against the machine instincts. That struggle? I'm not quite sure how it will turn out. But for now, at least, we can say this: The future sits almost like a cold-eyed dare in front of us. *Just try to avoid this!*

Chapter Two: The Age of Network Power

In which the Seventh Sense reveals a fundamental insight: Connection changes the nature of an object.

1.

Several hundred years ago the forces of the Enlightenment and the Industrial Revolution, like twin hammers, began working away at the roots of an ancient order. The powerful ideas of liberty, freedom of thought, science, democracy and capitalism – these all layered one upon the other. They washed, like irresistible tides, across the institutions and kingdoms and beliefs of Europe and in a process of revolution, of invention, of destruction and creation, they put a period at the end of one era, and began the very first lines of a new human story. These forces produced what we know today as the modern world: Trains knit new markets, science tripled life spans, democracy liberated politics. Confronted with this really irresistible pressure, a gulf opened. The world started to cleave. On one side were the nations and peoples that our modern economists would come to know and label as a "Convergence Club." [9] This group mastered and refined and then used the tools of their era to become industrial, democratic, scientific and rich.[10] They left the age of kings and feudal lords, of alchemists and all-knowing priests behind. At the same time, a "Divergence Club" appeared. These nations missed the essential turn. They were trapped. Old ideas, useless habits of power, inescapable history – varied shackles held them back from the punctuated shift to a new, more advanced equilibrium. Russia, China, much of Latin America and Africa – for them, the leap to being honestly modern was fatally elusive. Even today, they struggle to catch up.

We are now in the earliest stages of a shift that promises to be still more consequential than the one that enlightened and industrialized our world over several centuries after the Dark Ages. The essence of this shift is best captured by the prodigious explosion of different types of connection emerging around us now – financial, trade, information, transport, biological – and the innovative combinations that follow these and other fast, fresh links. Modern, highly-connected systems are different than those with less connection. And, as we'll come to see, they are particularly different from those with *slower* connection. We experience power through networks now, as once we experienced it through brick-bound institutions like universities or military headquarters or telephone company switches. You can no more understand the operations of Hizb'allah or China's central bank or the most valuable Internet companies today without at least this frank admission: Their power operates as much through light pulses running through fiber optic webs as it does in any physical sense. Think of the most influential geopolitical forces. The most lethal militaries. The greatest new commercial or financial efforts. All now depend on and are nearly defined by their fluency with different sorts of connection.

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[9] **On one side:** William J. Baumol, *Convergence of Productivity Cross-national Studies and Historical Evidence* (New York: Oxford University Press, 1994)

[10] **This group mastered:** See Joel Mokyr, "The European Enlightenment, the Industrial Revolution, and Modern Economic Growth", *Max Weber Lecture,* European University, March 27, 2007

Networks emerge when nodes – which can be composed of people, financial markets, computers, mobile devices, drones or any lively and connectable object – link to other nodes. Networks can be defined by geography, or by language or currency or data protocols or any of a thousand particular features.[11] *People who live in Bangalore*, is a network. As is, *Switches running DNSSEC protocol on the Internet* or *Businesses transacting in Rupiah.* An engineer might say: Network power is simply the ceaseless summing, at any instant, of all these bundles of connection. Real, physical networks hum magnetically now in cities that now pulse and grow with accelerating, connected speed. New York City is network, in this sense, as is Beijing or – in a less evolved way – the Alaskan steppe. So while it's tempting to call the 21st Century the "Urban Century", in fact the billion-people a decade rush into cities is a symptom. A larger hunger for the constant knitting of lives together, for fresh and efficient connection drives us.[12] Of course completely, powerfully virtual instances of networks exist too: knit webs of computers teaching themselves how to read, or the fast, paranoid and careful buzzing of constantly alert cybersecurity firewalls. All of these systems are defined by relations. Their power comes from the number, the type and the speed of the connections they hungrily establish and then use. Networks don't merely speed up our markets, our news, or our innovation – they revolutionize the nature of their power. Broad-based interconnection can cause and even determine events.

These expanding, ever-thicker webs of data and linkage can be mapped, and taken together they reflect something we are coming to know as "Network Power".[13] By this phrase we mean not merely the Internet or twitter or crypto currencies like

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[11] **Networks can be defined:** For an excellent overview of networks the following texts are of use: Albert Barabasi, *Linked The New Science Of Networks Science Of Networks*. (S.l.: Basic Books, 2014), Mark Newman *Networks: An Introduction*, (Oxford: Oxford University Press 2010); Remco van der Hofstad, *Random Graphs and Complex Networks. Vol. I*, (Eindhoven University of Technology, 2015); Alexander R. Galloway and Eugene Thacker. *The Exploit a Theory of Networks* (Minneapolis: University of Minnesota Press, 2007), and S. Boccaletti, V. Latora, Y. Moreno, M. Chavez, D.-U. Hwang, "Complex networks: Structure and dynamics," *Physics Reports*, Volume 424, Issues 4–5, February 2006, Pages 175-308

[12] **A larger hunger:** Brandon Fuller and Paul Romer "Urbanization as Opportunity," *Marron Institute Working Paper* No. 1, 2014

[13] **These expanding, ever-thicker webs:** See Castells, Manuel. *Communication Power*. Oxford, UK: Oxford University Press, 2009; and Castells, Manuel. "Network Theory| A Network Theory of Power" *International Journal of Communication*, Volume 5(8 April 2011)

BitCoin – these are, of course, expressions of a kind of network power. But "Network Power" is something larger. It represents a potentially comprehensive grasp, new in human history and enmeshing billions of connected lives and tens of billions of linked sensors and machines. It is becoming, with every passing moment, more comprehensive: more sensors, more links, more points and more speed. Cascades, epidemics and interactions are ubiquitous on all these networks, producing unexpected innovation in their collisions: the weaving of genetics and databases, for instance, or of terrorism and mobile messaging[14]. Scientists who study networks call this sort of change "Explosive Percolation," by which they mean an instant shift in the very nature of a system as it passes a threshold level of connectivity.[15] This melding of nodes into a single fabric is not unlike the linking of water molecules one to another as the temperature drops. One moment you have something you can drink; the next you have ice. So: One moment you have a world of simply connected users, the next a billion-person platform like Facebook or YouTube solidifies. One day you have tumbling, angry fundamentalists; the next a linked terror movement. And because the impact of terrorism – which might be best defined as violence with an aim of causing psychological impact – depends on connection, exploding the landscape of links instantly expands its effects.[16] The network enables a new kind of terror. It changes its nature. Expands its impact. Such elemental phase transitions, where more means different, appear everywhere in linked natural systems– the formation of crystals, for example, of the collapse of an ecosystem when the last of a keystone species is hunted down. They appear on networks too. So you might say: A phase transtion lingers ahead of us in our security, our finances, our politics. The age we're entering now will be as different from the age we're leaving behind as the Enlightenment was from the dark feudal era that preceded it.

The Enlightenment's revolution of free ideas and men and trade and capital demanded a new sensibility. Our age is similar. It insists already on a fresh feeling for the power that emerges as a result of connection. There's an irony here: At the very moment when we might expect ourselves to be most free – liberated by wireless connections, by easy jet travel, by never-off communications – we find ourselves, inescapably, enmeshed and dependent. Mastery of connection turns out to be the modern version of Napoleon's *Coup D'Oeil*. Connection increasingly defines the most elemental pieces of our lives. The old individualistic, me-first instincts don't answer as well as they might once have when "me-first" now demands connection of some sort in order to get what you might want: Am education, better medical care, a pizza. What is true for the machines all around us now is true for us too: We are what we are connected to.

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[14] **Cascades, epidemics and interactions:** Dirk Helbing, "Globally Networked Risks and How to Respond," *Nature*, 2013, 51-59.

[15] **Scientists who study networks:** D. Achlioptas, R. M. D'souza, and J. Spencer. "Explosive Percolation in Random Networks." *Science*, 2009, 1453-455.

[16] **And because the nature of terrorism:** See Anthony Richards, *Conceptualizing Terrorism*, (Oxford: Oxford University Press, 2015)

Centuries from now, our great-great grandchildren will look back at our age and name it as we have named "The Enlightenment." Perhaps they will call this era "The Great Connection" or the "The Enmeshmnet" or somesuch. They will spot the winners and losers of our age as we do in our own review of history. That distant generation will identify a new "convergence club" emerging among us now, even if we can't quite name its members yet. Already we can see lavish rewards accumulating to the people and nations and companies who have established an early grip on this new sensibility. They understand and manipulate connective power. What they all share is a feeling, as instant and certain as an instinct, for what it means to be enclosed, constantly, by ever growing masses of connection. A set of forces, invisible to many, is now applying a merciless and grinding pressure to the familiar structures of an older age.

The struggles of our cherished institutions – the US congress, the military, the news media, our educational system, our once-inclusive capitalism – to achieve the very aims that they once elegantly and efficiently met is only the visible evidence of this shift. Buried underneath their lurching collapse is the real source of this change, a new connective energy. Power is now passing with a rippling, ripping energy from old, once-useful people and institutions and ideas and into these new platforms and protocols, built for an age of connection. If this passage has so far only wiped out encyclopedias, telephone companies or taxi medallions, it is merely because it is just beginning.

2.

The Seventh Sense, in short, is the ability to look at any object and see the way in which it is changed by connection. This is *the* essential skill. Whether you are commanding an army, running a Fortune 50 company, planning a great work of art or thinking about your children's education. You need to be able to look at a car, a hotel room, a share of stock, a language, a translation machine and say to yourself: Connection changes the nature of an object. It changes the nature of every object around it. This book is the story of just how and why that happens and of the way in which an instinct for this power now rests behind the fattest fortunes and the greatest successes of our age. Connection changes the nature of an object means connection changes the nature of your life, of mine, of our government, of the wars we fight and the peace we secure. The heart of the problem ahead of us is not small. It is nothing less than the most significant shift of power balances since the Enlightenment and the Industrial Revolution. How high are the stakes? If the Enlightenment is our reference, then I think we can say they are nothing less than total.

Of all the Seventh Sense ideas, this single concept is the most fundamental: *Connection changes the nature of an object.* A medical diagnostic machine is impressive; one that is connected to a database of information that can accelerate and improve or perfect a diagnosis is revolutionary. The act of linking our bodies, our cities, our ideas – everything really – together, introduces a genuinely new dynamic to our world. It creates hyper-dense concentrations of power. It breeds fresh chances for complex and instant chaos. The emergence of surprise, tragedy, of wealth and hope will be more common now than in less revolutionary times. To follow the logic of the French philosopher Paul Virilio, for a moment: *The train produced the train accident. The plane produced the plane accident*[17]. Surely we can count on the network to produce the network accident – and many of them. In such a world the question of what you "have" – by which I mean what you are connected to – determines what you "are." You have friends on a social network. The US has a currency platform. Some new startup has an artificially intelligent machine. We all have possibilities and vulnerabilities we only dimly understand.

The great insight of the Enlightenment was that the nature of an object – a person, a piece of land, a vote, a share – changed when it was liberated from old fetters of tradition, ignorance, habit or fear. That single shift triggered centuries of disruption, of wars, of creativity and great human advance. The world realigned itself. The Seventh Sense era will be similar. When we are connected, power shifts. It changes who we are, what we might expect, how we might be manipulated, attacked, enriched. It is too early to map with any real fidelity the landscape that will emerge as a result, but we can say at least this: The nature of an object, *any object*, changes when it is connected. We need to say too: We are relatively early in our age of connection. It's not just that so much of the world remains to be linked; it's also that the nature of connection itself is changing. It is becoming instant. It is increasingly sharpened and enhanced, we will see, by the use of artificial intelligence. Basic connection is a powerful force; instant, AI-enabled links? You can imagine it must be something else entirely.

Let's take as an example a tool you're using right now, the English language. Any language is an "object" of sorts, a tool whose power depends on how and where it is used. Just as widespread use of the dollar or the British Pound or gold – for trade, for finance or for stashing under mattresses – marks a network of economic exchange, so English is a mesh for information sharing. When Spanish and Lebanese and Russian researchers gather to design a drug molecule, when astronauts talk in the International Space Station, when bankers settle finance policy in the midst of yet another unexpected crisis, they are using a powerful, standardized, shared tool that makes their work possible and efficient. English in this role, like French before it, has an appealing leverage: The more people who use it, the greater the incentive to learn it.

But when we think of English in a network sense, we see it is more than simply an object. It's a means of connection, something that information scientists call a "protocol". You may know the word from the realm of diplomacy, where protocols ritualize and decide everything from where the President sits at a dinner to how a letter must be addressed. In technical terms a "protocol" is also a rulebook too. Some network protocols you may have heard of – HTTP, DNS, SWIFT all serve as links in this sense. They translate digital bits into organized web pages, secure packets or financial vouchers. Protocols embody shared rules. Their subtle, decisive power is to place each bit of data in a reliable, predictable order, just as diplomatic protocol might seat ambassadors at a negotiation. "Protocol," the theorists Alexander Galloway and Eugene Thacker have written, "is a system for maintaining organization and control in networks."[18]

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[17] **To follow the logic:** Paul Virilio and Philippe Petit. *Politics of the Very Worst: An Interview by Philippe Petit*. New York: Semiotext(e), 1999

In a world of older, more traditional power distributions Americans might worry about a day when another language, another "protocol" in a sense – Chinese or Spanish, say – would pry the central connective role away from English. Protocols are hard to change, of course. So many people have learned English; whole systems depend on its use. To suddenly switch the world's airline pilots, bond traders and computer programmers to Chinese or Spanish would hardly be worth the immense cost and the colliding confusion such a transfer would demand. But it's here where the Seventh Sense axiom, that connection changes the nature of an object, gives us a new view. For the first time, as a result of connectivity, a once unimagined possibility exists: rapid, real-time machine translation. Fast, ubiquitous network links mean that the central role of English is boiled away by another language than by a connected, intelligent network skin. "Good morning," is less likely to be overtaken by a greeting from some other language as it is to be effortlessly, invisibly transmuted into "早上好" or "Buenos Dias." Fast access to a great translation algorithm will be more important than the ability to speak English (or Spanish or Chinese). Even as an advocate of learning other languages, it's hard not to feel that the American parents now plowing their children urgently into Chinese classes are missing the point. Fluency in any second language in the future will be an arcane specialty. Better to teach the kids how to build an AI, or to debate the moral reasoning of Confucius and Socrates than how to order dinner. The machines will take care of that. Power in a connected age will pool, then, not in the mouths and minds of English speakers, but rather into the hands of anyone who controls the best translation server.

Connection has changed the nature of several objects here: The language itself, the people who use it – pilots, commodity traders, machines, you and I. You can see how the ability to design, build and turn on (or off) the fastest, smartest, most connected language machines becomes a nexus of fresh power. What will replace English isn't Spanish or Chinese, but a protocol. This sort of specialized data-pipe will permit instant, always-improving translation. It will become as crucial to the operation of the global economy or research laboratories or entertainment companies as English now is. *More* crucial, in fact, because these machines will enable vast new communication links with a fidelity far better than pidgin-level speech. They will consider not only what we say, but what they suspect we *mean* to say in the quest of ever clearer discussion. The pre-network instinct of *Fear Chinese! Fear Spanish!* is the wrong one. As is the idea to teach the world Chinese or Spanish as a source of power. Rather, *Can we control this turbo-smart connected language platform?* is the right question. So many of the threats we worry about today have been similarly simplified and misplaced. *Fear deflation? Fear ISIS? Fear the RMB?* What we should be contemplating with great care is the connected skein that enmeshes us and all these connected knots of worry. We will see, over and over again, the way in which connection shifts, alters and even destroys the way an object moves and lives. The main point here is straightforward: New links, exploding into operation around us everywhere now, alter everything from how terrorists operate to how investments perform. And the failure to spot, use and understand that fact will be a source of our biggest future tragedies. Do you feel the global economy is more stable now than in 2008? Are we less susceptible to terror now? Is your data more secure than in the past? What do all these problems have in common?

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[18] **"Protocol":** Alexander Galloway and Eugene Thacker, "Protocol, Control, and Networks" in *Grey Room* 17, Fall 2004, pp. 9

Perhaps we're targeting the wrong things.

3.

If the idea of a Seventh Sense for our changing world is quickly apprehensible enough – *It's that gut feeling that seems to animate wild new businesses or attacks or risks* – the deeper logic will be harder to name and master. We will have to consider the most ancient instincts for power and safety in light of the very newest technological experiences: speed, machine intelligence, really constant connection. "Instead of thinking in terms of surfaces – two dimensions – or spheres – three dimensions – on is asked to think of nodes that have as many dimensions as they have connection," the French philosopher Bruno Latour has written of a network age. "Modern societies cannot be described without recognizing them as having a fibrous, thread-like, wiry, string, ropy, capillary character that is never captured by the notions of levels, layers, territories, spheres, categories, structures, systems."[19] Familiar borders, like the ones dividing science and politics or military power and civilian safety begin to erode when everything is linked. Computing machines and networks were once locked into usefully narrow silos, unconnected: banking, medical monitoring, power grids. In the past you could mark them as having "levels". But now they overlap and inform each other, meshed into that stringy surface Latour describes.[20] The Seventh Sense is a feeling for just how this world might be navigated; how those fibers might be pulled and yoked to new purposes.

This multitude of interwoven links is why networks and their pieces spill now even into the non-digital elements of our life, from how we grow our food (with GPS-guided, self-driven tractors) to how we fight our wars (from a distance, using constantly connected drones.) As a result, many of the technical choices we're about to make will be strikingly political. Who has access to what data? Where is the line between human choice and machine intelligence? Why is one computer system better than another? These decisions – and the people who make them – will determine power distributions. They will reverberate through our future with the same constant noise as the Bill of Rights, the Magna Carta, the Analects or the Koran still do. The real contests ahead will be over networks, and we will come to understand in this book how these struggles will unfold and how to fight them – but keep in mind that this means, in fact, a deeper conflict. A fight about values. Networks are like any organized system; they reflect the aims and ethics and habits of the people who build them. The price of meshing so many different aims and sensibilities, hopes and hatreds, will be costly. When Nan said that really, fully grasping our world would be *expensive* this is what he meant. Particularly if he's right that we'll all be going half mad under the pressures of constant connection as we try to make the shift. We will pay with our old ideas, our current fortunes and – if we're not careful – our safety.

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[19] **"Instead of thinking":** Bruno Latour, "On actor-network theory: A few clarifications," *In: Soziale Welt47* 369-381

[20] **Now the overlap and inform:** Richard Mortier, Hamed Haddadi, Tristan Henderson, Derek McAuley, and Jon Crowcroft, "Human-Data Interaction: The Human Face of the Data-Driven Society", *Social Science Research Network* (October 1, 2014)

Engineers know this idea that network design shapes the real world as "Conway's Law."[21] Melvin Conway was an early AT&T systems designer who noticed that the organization of any connected telephone system had an impact on the communities or offices it touched. Who could call who was a kind of power map. The physical world, Conway realized, could be shaped and influenced by something other than a physical force; it could be reshaped by information flows, by connection. The expansion of airline routes to Indonesia, for instance, was a network design change that tilted real-life economic patterns. New flights enabled tourism, manufacturing, investment. In our connected age, the design of research studies, voter databases, genetic information sharing networks, financial webs – all of these will create bumps in the surface of our every day lives.[23] The way in which phones or data links or mobile devices are tied together changes the way we act when we use them or when we handle them to touch each other, even if the design of these systems is insensible to us most of the time – the way a marble under a carpet might create a surprising bump. Networks can organize themselves in many different ways. And in the choice of layout, or the evolution of that layout in response to pressures of profit or technology, a great deal can be decided. "When you decide what infrastructure to use for a project, you're not just making a technical decision," the programmer and investor Paul Graham has written. "You're also making a social decision, and this may be the more important of the two."[24]

You might ask: What drew tens of millions of people to watch live as Steve Jobs unveiled some new Apple device in the last years of his life? Of course, partly it was the cool technology, the warmly charming charisma of the man. But something else was at work, I think. What Jobs was unveiling atop those black-backed stages over the years as we waited for him was nothing less than whole new worlds, connected landscapes that emerged entirely from systems Apple was secretly breeding. He wasn't merely introducing a phone; he was changing how we were going to experience life. "Every once in a while, a revolutionary product comes along that changes everything," Jobs began his famous rolling introduction for the first iPhone in 2007. "In 1984 we introduced the Macintosh. It didn't just change Apple. It changed the whole computer industry. In 2001 we introduced the first iPod. It didn't just change the way we all listen to music. It changed the entire music industry." Apple devices were cracking open paths to whole new worlds in this sense. The company develops an app for podcasts; a new media form is born. It builds an architecture for video calling; our relations to each other deepen a bit. What Jobs was presenting was new and – until that very instant – unimagined universes of possibility that we'd all explore. No wonder the world tuned in.

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[21] **Engineers know this idea:** Melvin E. Conway, "How Do Committees Invent?" *Datamation,* April, 1968.

[23] **In our connected age:** Barbara Schewick, *Internet Architecture and Innovation,* (Cambridge, Mass.: MIT Press, 2010) Chapter 1

[24] **"When you decide what infrastructure to use":** Paul Graham, "Great Hackers", on paulgraham.com July 2004

When we speak of "architecture" in a digital sense we mean the design of the inside of a computer – how the chips link to each other – or the layout of a phone system, the mechanics of a block-chain or encryption tool, or the ethereal construction of a datascape so it can be better used to train artificially intelligent programs. These are design choices that, just like the ones about where to put a door or a freeway, conclusively decide and shape movement. They affect speed. Politics, social norms, technological needs – these and other forces all shape the architecture of digital systems. But –and this is where a new sensibility comes into play – the architectures, in turn, touch and twist politics, social norms and technology. Instant communication, social webs, fast-spreading news – all of these forces redound powerfully on the real world. They affect how we think and act. And, as a result, controlling these connections is a profound source of power. It's also true that architectures and designs dropped into different places have different results: Think of how an open computer system plopped into the Middle East might be used differently than one placed in the American Midwest.

It was these sorts of vibrations, the ones made by power pulsing through certain forms or networks in history, that led the Orientalist scholar Karl Wittfogel to his famous "Hydrological Hypothesis" in the last centrury. Ancient agrarian societies – Egypt or China, for instance – developed political orders that were decided by their need for large scale irrigation, Wittfogel explained. Without water, these societies were dead. Without control of that water? Exposed to constant chaos. Chinese dynasties tumbled and Egyptian prosperity collapsed as unexpected, unpredicted droughts and flooding tore them apart. Taming water became the aim of all politics. An unusual centralized effort emerged. It screwed these scattered, nomadic societies into a tight, enduring and largely effective authoritarianism. Wittfogel argued that the "irrigation societies" of Egypt, China, Mesopotamia, and South America all reflected this link between survival and water control. Power pooled in the hands of what he called a "Hydraulic Bureaucracy". China's "Yu the Great", for instance, rose to power around 2800 B.C. because of his skills in throttling the unpredictable and deadly Yangtze flows. "Contrary to popular belief that nature always remains the same," Wittfogel wrote, "nature changes profoundly whenever man, in response to simple or complex historical causes, profoundly changes his technical equipment."[25]

Control of water in those ancient ages and control of information in our own are not so different. We are in the midst, after all, of a change in our own "technical equipment." We should read Wittfogel with one eye on our own age, particularly his warnings. "Like the tiger, the engineer of power must have the physical means with which to crush his victims," he wrote of those older orders. "The agromanagerial despot," he said of the masters of those connected water systems, "does indeed posses such means." We should ask: Are we watching the emergence of an infomanagerial despotism? Who controls the dataflows we rely on now? The protocols?

If we want to earn an honest understanding of how power works now, we need to begin by looking under the carpet in for the marbles, in a sense. We need to touch and follow the networks themselves, observing their construction and flow as Wittfogel once traced the transmutation of ancient water systems into the politics of an earlier age. We too need to go down, inside the connected systems of our era before we can come back up and begin, confidently, to act. That journey won't always be easy because it will require us, as we'll see, to consider some ideas that make no sense using our current way of thinking. But, remember: The idea of a democracy sounded like a laughable joke to hereditary heads of state until the 18th century – *Let the peasants vote for what they want?* The implications of our new networks will set uncomfortably against many of our own habits and biases – or at least what we've been told our habits and biases should be by an older generation. But once we have mastered this new instinct, there will finally be a day after which we will look at the world and really feel the new logic at work. We'll be Napoleon, not Brunswick-Wolfenbuttel. And from that day on, everything will honestly be different.

4.

We are still early in this age of network revolution. It was less than 50 years ago, after all, that the first digital communication switches emerged. Today, devices, places, people – are all losing what we might think of as their innocence of isolation. The "Internet of Things" will expand the range of connected devices – phones, refrigerators, heart-lung machines – from 10 billion today to 50 billion in less than a decade. And even with 50 billion connected points only 2 percent of the world's people and devices and locations will be linked[27]. The analysis of this linked space is a young discipline, younger even than the nearly newborn technologies at play. It was only in the mid-1990s that the first sophisticated studies of "network science" became technically possible. They have since become essential, as crucial to our network world as the first maps were to explorers centuries ago. Fundamental papers, by now-legendary researchers like the mathematicians Steven Storgratz and Albert-Lazlo Barabasi or the biologist Simon Levin, identified simple laws running in single networks. The Internet, financial markets, jungle ecosystems and even our own brain connections were found to exhibit similar, often surprisingly common habits.

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[25] **"Contrary to popular belief":** Karl August Wittfogel, *Oriental Despotism; a Comparative Study of Total Power* (New Haven: Yale University Press, 1957)
[27] **"The Internet of Things":** See "The Zettabyte Era – Trends and Analysis" from Cisco Systems (San Jose) 2015

Unfortunately, most of our leading figures still think in terms of disconnected dangers, of risks that can be reduced to nouns: Atomic bombs, fundamentalists, hacks. To be sure plenty of these sorts of dangerous nouns confront us now. But the sharpest edges of our problems come from the fact that these nouns are part of networks, which spring them into connected, surprising action. Computers, airplanes, derivatives – they snap and break systems when connected into cascading, fast threats. When Master Nan spoke of spiritual illness, I think this is particularly what he meant. Total confusion about our world, followed by all the emotions of the lost: anger, denial, irrationality. "A commander in chief," von Clausewitz wrote of an older age of land warfare, "must aim at acquiring an overall knowledge of the configuration of a province, of an entire country. He must hold in his mind a vivid picture of the road-network, the river-lines, and the mountain ranges without ever losing a sense of his immediate surroundings."[28] This sort of command mastery is still relevant in an age of networks. It is as important for the design and operation of our economy, our politics, our data and our security as it is in considering problems of war and peace. But who of our current leaders holds in his or her mind such a vivid map of the ethereal and essential networks running around us now? Who owns that subtle overall knowledge and then acts with the confident sensibility such wisdom would produce?

At this early moment in a new revolution, our leaders are blind. It's not simple technical fluency that eludes them – though this is among the most embarrassing of their deficits. It's that avoiding cyber accidents, controlling the spread of nuclear weapons, handling global warming, stemming fast financial crises, restoring equitable economic growth – all of these puzzles yearn to be tackled with a new sensibility. Not least because often they are *produced* by a fresh set of links and instincts. These problems linger not as independent fractures on a solid base, but rather as markers of spiderwebbing, connected cracks pressing out on knotted up networks. It is only by tackling them with network ideas that we can hope to make progress. That the rise of ISIS and the forces of global income inequality are driven by the same laws can only be understood with a knowledge, or better an experience, of connected power. Our leaders are preparing us to fight expensive new wars we need not fight, to confront enemies who might best be regarded as partners – even as they flail at the to corrosive problems of a new, emerging order simply because they can't see or feel the essential links of power that are, even now, making the familiar dangerous and the dangerous familiar. "We got to know the *nature* of calculating by learning to calculate," the Austrian philosopher Ludwig Wittgenstein observed in his "On Certainty" at the end of his life.[29] So with networks. We will get to know their nature by learning to use them. By watching what they do, observing them in their surprising movements. We know at least already that puzzles like the future of US-China relations or income inequality or artificial intelligence are simply not addressable with traditional thinking because they occur on a network surface now. Old-style ideas about each of these will likely lead us down dangerous paths. Our leaders today are, as a result, imperiling us in ways they can't even understand. Honestly, these figures are not mentally prepared to fight any sort of battle on this landscape. They probably never will be.

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[28] **"A commander in chief":** Von Clausewitz, p 110

I'm not saying effective leadership now demands you know what "the instantiation of a class" in object oriented programming means – or that you master the technical roots of some other crucial, philosophical idea of connective design. But a feeling for the laws of networks, for the normalness of connection and the pressures that it produces is essential at least. That the terrorists of ISIS or the founders of gaming app companies are better at growth hacking – the subtle art of using data, connection and instinct to breed massive virtual communities – than our own institutions or our leaders should unnerve us for a couple of reasons. First, because it demonstrates a mastery of new power tools that move with astonishing speed, assembling nation-sized movements and forces in incomprehensively brief periods of time. But we should also worry – and this is as crucial – because that fast pace is colliding with a set of slower-moving instincts, institutions and people who still control substantial levers of power.

At the same moment in time that many of us are alive with the joy of being around something that is beginning, most of our leaders are locked sadly or with terror into the ending of something else. Same exact moment. Different instincts. It reminds me of Virginia Woolf's novel of transitions, *The Years,* when the once-commanding Colonel Pargiter finally passes away, liberating his daughter Eleanor into a world of adventure even as the change dooms Crosby, the family's long-serving maid. "For Crosby, it was the end of everything," Woolf wrote. "She had known every cupboard, flagstone, chair and table in the large rambling house, not from five or six feet distance as they had known it; but from her knees as she had scrubbed and polished; she had known every groove, stain, fork, knife, napkin and cupboard. They and their doings had made her entire world. And now she was going off, alone, to a single room at Richmond."[30] The people now lamenting the decline of television, of newspapers, of a disconnected age, who are baffled by constant connection or apps of the moment or machines that learn should be given their quiet moments with the old structures. They knew that world from their knees, built and maintained it as much for us as for them. Elements of that slower unconnected era must be preserved. But, also, we must move on. These people will never grasp the opportunity that lingers in front of us now.

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[29] **"We got to know the nature of calculating":** Ludwig Wittgenstein, *On Certainty* ed. G.E.M. Anscombe and G.H.von Wright Translated by Denis Paul and G.E.M.Anscombe, (Oxford: Blackwell 1969)

[30] **"For Crosby":** Virginia Woolf, *The Years,* (New York: Harcourt, Brace & Jovanovich, 1937) p. 216

This book is not, in any event, written for them. It is written for those of us who are inheriting the possibility of their inventions, the price of their errors. And it is aimed too at the people and the generation who are coming to power and who are – in some senses—already in power, even if they don't appear to be just yet. By this I mean the cohort bred into the age of connected acceleration; the first generation of leaders and students and warfighters and entrepreneurs to not find the digital strange, but to find it natural and curious and wonderful in its power. It is written for those who will have to manage machines that are smarter than humans, networks that move faster than we can calculate, and cascades of chaos and conflict and creation as this new era settles in. It is for anyone too who has ever begun to speak about the strange tensions of our age, who has begun maybe with the lines, "Maybe I'm sensitive or something, but…" as they feel the tickle of their own lives, minds and cells increasingly intertwined, electrified. It is written for those afflicted with an aching feeling that we're being torn apart. Pulled into foolish conflicts and dangerous failures by old figures who don't understand this age. Pulled into sacrifices of liberty and freedom by young technological wizards who can't balance the miracle of their cold inventions with our hot, human needs for freedom and control.

But I should say too that this book is not, either, a full-throated endorsement of the technological elite. Yes, it's wonderful that we are at the beginning of a new period. But it's not quite right to say that *where the network age begins, the old one ends.* In fact, that's a dangerous conclusion. To begin with we're at an extremely primitive point in our understanding of networks, comparable to where economics was in the 1800s or medicine centuries ago. We have a small, modest collection of tools to analyze and think about and consider the complex physics of a networked world. We barely understand the operation and evolution of many single networks today – and really only sort of grasp one or two types of design with any real depth. But networks of networks? Instant networks? Artificially intelligent ones? We have basically no laws or experience with these yet.

The headlong rush ahead into a world of constant connection will, of course, be balanced, resisted, braced against, undermined, fought and manipulated. Networks touch everything, remember? The idea that such elemental control – of you, of me, of our finances or our nations – would move with anything less than a few explosions is naïve. Revolutions don't occur quietly. Consequently, the very thing that makes many of the greatest tech minds of our age magnificent – a sense of unstoppable determinism, a disregard for history, a slavish and instinctive urge to follow what we'll come to know as a Seventh Sense – is a bit of a disadvantage at times. I know many of these men and women; their iron certainty is only a bit more dazzling than the success they have had in building something from nothing in a human instant. But that confidence in the new leads already to crushing collisions with the sorts of older ideas – privacy, localism, slowness – that echo throughout mankind's history precisely because they touch in subtle ways on the human heart, on what it means really to live.

A friend of mine who runs one of the leading technology firms told me of the unnerving realization that the most important figures at the firm were under 25 – and no senior person had much of an idea about what they were doing. This is an inversion: Usually in a society the most power accrues to those with the most experience, and judgment and perspective. Today, tremendous even decisive influence clusters in the hands and machines of a young caste whose very fluency with the norms of a revolutionary age blots out a whole set of important connections, a group that instinctively feels networks but is deaf to the music of philosophy, history and even tragedy that should inform the operation of so much power. To love risk, to love creating and building – this is fine. Wonderful even. But it's also not enough.

"It happens that programming is a relatively easy craft to learn," the MIT scientist Joseph Weizenbaum observed in the 1970s, as computers emerged into academic life. "Almost anyone with a reasonably ordered mind can become a good programmer with just a little instruction and practice. And because programming is almost immediately rewarding, that is because a computer very quickly begins to behave somewhat in the way a programmer intends it to, programming is very seductive." The mistake, Weizenbaum warned, was to think that easy programming of a machine was really a predictor of anything other than getting a machine to follow commands. It didn't mean easy programming of a complete operation. Or of science. Or, godforbid, to think you could easily program the world. Programming, he warned, "appeals most to those who do not yet have sufficient maturity to tolerate long delays between an effort to achieve something and the concrete appearance of success. Immature students are therefore easily misled into believing that they have mastered a craft of immense power and of great importance when, in fact, they have learned only the rudiments."[31] Tempting as it may be to call for our world to be turned over to entrepreneurs or technocrats, to let their tools of wired efficiency tear with a fast disruptive enthusiasm into our politics and economics, the reality is that the world (thankfully) does not respond like a cold machine. That delay between an effort to achieve something and its realization that Weizenbaum mentioned, it's the essence of being human. The delay is filled with worry, hope, debate, exploration, error, success. In short, it's a hitch that should never be ground out of our system, no more by technology than by authoritarian or totalitarian or fundamentalist doctrines that have ever promised instant solution to any probem. "Just let the entrepreneuers do it" or "Just let the machinces do it," is no more a solution than "Just let the Nazis handle this," could have been.

So this is our dilemma: Old, white-haired, network-blinded leaders (and young figures who think like them despite their age) pull us from Washington and other capitals and traditional power centers into a world where their ideas and policies constantly fail. They don't understand networks; never will. At the same time a new, rising generation lashes us into connected and amazing meshes. We welcome this connection. Centered in Menlo Park or Seattle or Zhonguancun or Shenzhen, these figures understand networks perfectly, but not yet much else. Old and new, each group works anyhow on our freedom. We are pulled dangerously between these forces. Problems seem to get worse. What we need to find is a way out of this trap. A fusion. A blended sensibility of both the edgiest ideas of connection and the most unshakeable and brutal and inarguable requirements of power. This is the Seventh Sense. It is our only possible protection.

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[31] **"It happens that programming"**: Joseph Weizenbaum, *Computer Power and Human Reason: From Judgment to Calculation*, (San Francisco: W.H. Freeman 1976), 276

5.

In the last century, as the economist Fredrich Hayek watched Europe both struggle against and flirt with the then-appealing ideas of Nazi and Soviet socialism, he marked the fundamental conflict of his age as the one between individual liberty and central planning. Recall that at that moment in history, the 1930s, America and much of Europe were in deep depression, their political systems struggling. The rapid growth in the USSR and Germany looked awfully appealing to many. The political stability of totalitarian ideologis had a certain placid charm in some quarters. But, Europe was, Hayek argued, walking nothing less than a road back to serfdom. Was man happier, better off, more justly fulfilled by the chaos of a market and democracy or in the orderly machine of authority, of clicking heels and machines? Hayek voted with his feet. He fled the Nazis in 1938, and he worried for the rest of his life that in the attempt to manage the risks of free markets and minds, the Europe he loved was running into socialism. "Is there a greater tragedy imaginable," Hayek wrote, "than that we should unwittingly produce the very opposite of what we have been striving for?"[32]

Hayek thought two safety catches of might protect mankind from the totalizing control habits of Soviet-style thinking: First, an unkillable human instinct for individual freedom, the squirm humans have always shown under the boot of too much authority. And, a second protection he thought, would be the really terrible, absurd inefficiency of centrally planned systems. No bureaucrat, no economist, could possibly out-perform the productive chaos of a market or an election in the long run Hayek felt. Finding the right price, matching supply and demand – it was impossible to think this could be done by some technocrat in a room somwhwere. This was what markets were for. This is how they encouraged profit, free-thinking, invention. Chuchill's famous line, that "Democracy is the worst form of government except for all the others," contained a certain truth: civilizations, yoked by democratic and market rules, reached more durable outcomes than despots or oligarchs. Hayek, as we look at his judgment now, was correct. People wanted to be free; the dream of central planning collapsed under its own weight with the USSR in 1989.

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[32] **"Is there a greater tragedy":** F.A. Hayek, *The Road to Serfdom* (Chicago: University of Chicago Press, 1994),

In our own age, a fundamental conflict lingers as well. This is the struggle between individual liberty and connection. We have to ask a version of Hayek's question: Are we happier, better off, more justly fulfilled through ceaseless linkage to the fast systems all around us? The appeal of constant connection is not a mere economic fact. It's become a feature our personalities and psychologies and even the biochemistry of our brains. To be disconnected, in so many senses, *hurts*. And while the human twitch for freedom remains as alive as a protection for us all, Hayek's second safety catch is eroding. Networks of deep connection, speed and intelligence will be powerfully more efficient than central planning; they know more than any central bureacrat might have. And they may yet be even more productive at times in their connection and intelligence than our existing structures or markets or electoral systems. Think of the way centralized, linked dispatch systems make a "sharing" economy of on-demand cars and rooms available in ways the market itself could not. Similar alluring evolutions lie ahead in medicine, in finance, in politics. The temptation to throw all in for some sort of technological political fusion, one that promises better returns on our time and money in exchange for our liberty, will grow. When we depend so much on connection for our identity, our work, and our safety how far from John Stuart Mill's line from *On Liberty* might we tread: "Over himself, over his own body and mind, the individual is sovereign."[34] Are we sovereign over our own bodies and minds? Over the machines? This is not a puzzle today's power class can or should touch. They may accidentally lead us to disaster. Hayek's fear, that in pursuing one end (freedom) leaders would secure its opposite (tyranny), is what we should share. The tools of the network age are ripe for misuse. In some senses, they are built for misuse: They are opaque. They are blindingly fast. They seduce and enmesh us with their new power. They demand, as a result, new sensibility for their final control.

There are many ways we will explore the Seventh Sense. The rise and fall of startup technology companies or terror groups or epidemics will lead us. We will examine, carefully, the tensions of a network age to understand where the cracks are coming from, and where new ideas are emerging. But I'm trying at least to write a bit with that challenge of Master Nan in mind. If we are, really, facing an ephochal change then we should handle the problems of our era with particular care; we should study the opportunities with real urgency. Two hundred years from now when the great companies and billionaires and revolutionaries of our age are crushed down below the horizon of history, it is the massive movements of states and populations that will remain, with their awful or wondrous traces. Will we live in an age of war or peace?

Is that something we can actually decide?

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[34] **When we depend so much:** John Stuart Mill, *On Liberty and the Subjugation of Women*, (New York: Penguin Classics 2007) 19.

Chapter Three:

War, Peace, Networks

In which The Seventh Sense reaches towards the questions of war and peace and power that will flavor our lives, like it or not.

1.

One afternoon in the fall of 2009 I received an unexpected call from the Pentagon. The US was, then, nearly a decade into the wars of Afghanistan and Iraq. Each, in its own way, possessed a strange and shifting character, the sort of dim premonition of a greater violence that has always most unnerved warriors and politicians. The old soldier's saying – *Fear chaos as much as the enemy* – seemed to animate, constantly, the progress of these two fights. Once, before I gave a speech to an audience of newly promoted one-star generals in 2010, a four-star general pulled me aside for a moment. He explained that I'd be speaking to a crowd of officers who had come of age pacing the murderous streets of these wars, watching soldiers under their command killed by an often invisible enemy. "You have to remember that these men have been seared, *seared*, by a decade of combat," he said. The best American military minds had tried, with characteristically direct and relentless energy, to box the wildness of these wars. In books and papers and thousands of patrols, through millions of hours of language training, and endless risky nights, they had tried. It never quite seemed to work. There would never be a durable sense of mastery. The wars, which appeared a certain and unfairly tilted fight to American victory at the beginning, had run longer than any in the nation's history. They were engines of chaos and fear.

The American Marine Corps General Victor Krulak once observed, "The war you prepare for is rarely the war you get," and you could find this phrase whistling through the years of American combat after 9/11[35]. One of the lessons of both Iraq and Afghanistan – and of the post-World Trade Center wars generally – was that the Pentagon and the fighting services had been unready for what they faced. Soldiers had arrived in Baghdad with forest-colored uniforms, thin-skinned transport, tank-led battle plans – all wrong and mostly dangerous. The most feared weapons system of the era told you something of the tone of the new millennium's wars: $50 to $100 Improvised Explosive Devices (IEDs). Hidden smashups of dynamite, duct tape, cellphone detonators and as much stubbly, impaling iron as could be found. They were impossible to deter. Rapidly deadly. The IED threat, one officer later reflected, "is a contemporary example of conventional militaries being confronted with a tactical surprise with operational—if not strategic—implications." [36] Like so much in our age, small-sized problems were spilling rapidly into crises of strategy. One hot battlefield instant – an explosion under an armorless truck, say – could freeze the operations of a billion-dollar division. Nearly everyone begins to ask, sometimes out loud: *Why did that happen?* Followed pretty quickly by: *What the hell are we doing here?* The little bombs were shaking more than the Humvees.

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[35] **The American Marine Corps General:** Victor Krulak, "A New Kind of War", in *First to Fight: An Inside View of the U.S. Marine Corps* (Bluejacket Press, 1984) 179

[36] **The IED threat:** Andrew Smith, "Improvised Explosive Devices in Iraq, 2003-09: A Case of Operational Surprise and Institutional Response" *Letort Papers* (Carlisle, PA: Army War College April, 2011) 9

Walking into the Pentagon, one is struck by cascading sensations of immensity and volume and, frankly, gravity. Surely, you reflect, there must be someone here with a plan for everything? But there was not; there is not now. Yet the massiveness, the ineffable historical density and weight of American power, is so breathtaking that its frequent impotence in the face of a changing world represents a particular and unforgettable and, well, searing shock. The soldiers who had experienced those cold, failing nights at the edge of superpower rippled with unease. This was the slim comfort of life inside big, old and lamed structures confronting the fast, blithe and unstoppable future.

By 2009, with the wars in Afghanistan and Iraq settling into a low boil, America's generals again began wondering what other cracks were spreading around the world. The Unknown and the Future seemed to have an uneasy parallel meaning. The diplomats worried about this too, of course, but with soldiers dying every day, the questions had a particular urgency for the military. The top of the command chain asked incessantly about what they might be missing. What fissures were running even through their own building, masked by its scale but waiting quietly to make their best plans look foolish and dangerous? And: How they could possibly confront this world with 30% less of what they had a decade ago? They made a few phone calls. I received one of them.

2.

It was hard not to notice, if you picked up one of those incoming queries from Washington and were asked to draft your views on how this uncertain world might be approached, that one of the main aims of the American military in recent years – reducing the number of terrorists – appeared to be backfiring. This was an irritating feature of many global problems. In spreading market capitalism ever wider, the world was also digging an ever wider moat between rich and poor, for instance. In trying to make the world modern with more connection we were, we found, lashing ourselves to some very unmodern risks. And in waging the most expensive war on terrorism in human history, the US was uneasily discovering that it was creating more terrorists. Secretary of Defense Donald Rumsfeld had sketched the nature of this puzzle in an October, 2003 memo with acid clarity. He asked: "Are we capturing, killing or deterring and dissuading more terrorists every day than the madrassas and the radical clerics are recruiting, training and deploying against us?"[37] Though this was a simple question, nearly fifteen years into the wars it was still hard to answer. There were a lot of dead terrorists. There were also a lot of new ones.

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[37] **He asked:** Donald Rumsfeld, memo, 16 October 2003, available at globalsecurity.org.

As the war against terrorism had progressed in the years since 2001, it had produced at least this: a huge amount of data. Inside the Pentagon, analysis teams poured over records of phone calls and text messages. They examined maps of personal relations, and studied granular statistics about who had been killed and why and when. All of this information went into targeting computers and databases, and what became more and more apparent with each passing year was that the spread of terrorism after 9/11 looked like nothing so much as the spread of a disease. This was, at first, no great insight. After all, revolutionary ideas, dangerous ideologies or just plain panic often look like epidemics. But what was shocking as you studied the Pentagon numbers was the speed of this infection. Disease epidemics, even the most virulently aggressive ones like Ebola or drug-resistant tuberculosis, move at the pace of human contact; they can be watched and blocked and even quarantined. But the contagions associated with terrorism were warp-driven to a pace well beyond what the soldiers and analysts could match or even fully monitor. “Is our current situation such that ‘the harder we work, the behinder we get?’” Rumsfeld asked in 2003.[38]

To be constantly behind. This was a commander’s nightmare. Among other things it was that sense of never quite catching up that had so seared the new generals in the audience of my speeches. But it seemed to be an inescapable reality. One day a guy in Baghdad would figure out how to make an Explosively Formed Penetrator (EFP) – a sort of pipe bomb that becomes a flying chunk of red-hot steel and can smash through a tank from 100 yards away – and ten days later the same design of projectile would take out an official thousands of miles away in rural Afghanistan, before US troops had had a chance to update their defenses.[39] *Behinder.* An American commander would arrive in a new town in Iraq, receive a briefing about who he could really trust, and discover a week later half of them were showing up on terrorist call logs. *Behinder.*

The Americans knew why this was happening. The data made that clear enough. The proliferation of roadside IEDs, for instance: Obviously there was Al-Qaeda Institute of Technology, no central IED academy where bomb makers could gather to safely study trigger design or leisurely swap placement ideas.[40] Such a place would have been flattened by a Tomahawk or a drone within hours of its discovery. And though tomes like Tarek Mahmoud el-Sawah’s famous 400-page guide to bomb making were often picked up on raids, they were out of date. (El-Sawah’s tips included things like using Casio watches as timers.) No, the force at work was buried inside a network of personal and technological ties, sometimes explicit, other times almost ethereal in their nature until they were made real in a blast. By 2011 you could peel back some corner of the web and find sites like *Al-Shumukh's Special Explosives Course for Beginners*, where dark diagrams were uploaded, debated, refined and re-drawn, like some sort of hobbyist site for car bomb geeks[41]. Deeper still, encrypted chatrooms and messaging services pulsed invisibly, firing off real-time tips (use aluminum not copper for detonation packs) and suggestions (Marines are easier to target in the morning). When soldiers said they were fighting a "terrorist network" they really meant it: the force arrayed against them was a self-repairing, growing, constantly-learning web.

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[38] **“Is our current situation”:** Rumsfeld 2003 memorandum as above

[39] **One day a guy:** Anne Stenersen, “’Bomb-making for Beginners’:Inside an Al-Qaeda E-Learning Course”, *Perspectives on Terrorism*, Vol 7. No. 1 (2013)

[40] **Obviously there was no Al-Qaeda Institute of Technology:** Matthew Bolton, “From minefields to minespace: An archeology of the changing architecture of autonomous killing in US Army field manuals on landmines, booby traps and IEDs” *Political Geography* 46 (2015) p. 47

The Pentagon had, after a few years of confronting this problem, organized a taskforce to deal at least with the IEDs, the "Joint IED Device Defeat Organization" (JIEDDO).[42] The group specialized in miraculous engineering. They absolutely lived up to the can-do, American spirit sound of their name: Gee! Do! Scientists and warfighters in JIEDDO devised ways to secretly surveil streets so they could fire on bomb-planting terrorists. They developed slick, blast-deflecting new designs for cars and pioneered armor that could absorb the hit of repeated surprise blasts. Gee! Do! was, its motto ran, trying to, "defeat the IED as a weapon of strategic influence."

That made good sense, of course. It was a bit weird that $100 pipe-bombs were disrupting America's ten trillion dollar national interest. But: Defeating *the device*? You could sense a limit in the way that mission statement was drawn out. It wasn't enough. Beating the devices wasn't the same as chewing apart the network that produced them. That was the real target. The devices kept coming with their own innovative, murderous rush, with the *gotta-have-it* new pressure we know as the desire for the latest phone or video game or flat-screen TV. This raised an important question: Just what did it mean, really, to beat a network? Could you win? Could you ever get *aheader?* In fact this is a question that resonates in many parts of life now. That feeling of constantly slipping behind, one that is tied to the heart of a connected order, a world where each additional link brings both a rich pipe of new data and a sense of what you might be missing or not quite understanding. To be *aheader* marks, we will see, the nature of a real Seventh Sense. When you can fully feel the network, understand its logic, then you can touch and use new sources of influence to reshape your business or your career or solve the problems in the world that bother you most. The war-or-peace dilemmas of foreign policy are an essential case – when they go wrong, they hammer all of us. And we can see in the ripples of global power ideas that are of use in nearly any sphere. How, for instance, to fight a network. The struggle of JIEDDO is, in a sense, similar to something all of us face now: Old vs. new. In any event, in the case of the IEDs, here was the most powerful nation in human history, backed by hypersonic missiles, always-on radars, and endless jet fuel that found itself unable to stop a group of half-educated and promiscuously backwards terrorists. You had to ask: What was wrong? And did the failure suggest something even deeper about the position of the dominant national power of the era? About the nature of our age?

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[41] **By 2011:** Stenersen as above

[42] **The Pentagon had:** On the establishement and background of JIEDDO: "The Joint Improvised Explosive Device Defeat Organization: DOD's Fight Against IEDs Today and Tomorrow," U.S. House of Representatives, Committee on Armed Services, Subcomittee on Oversight & Investigations report November, 2008; "IEDs: the home-made bombs that changed modern war,", *IISS Strategic Comments* Volume 18, Issue 5, 2012. Also LTC Richard F. Ellis, USA, Maj Richard D. Rogers, USAF. LCDR Bryan M. Cochran, USN, "Joint Improvised Explosive Device Defeat Organization (JIEDDO): Tactical Successes Mired in Organizational Chaos; Roadblock in the Counter-IED Fight" Submitted Joint Forces Staff College, March 2007

3.

A few days before Christmas of December of 1787, Thomas Jefferson sat down in Paris to write a letter to James Madison.[43] Madison was on the other side of the Atlantic, in Philadelphia, and struggling with refinements to the new American constitution, which had been drafted in the spring and summer just passed. The two men were frequent correspondents. They wrote to each other with an easy familiarity, revolutionary to revolutionary. Jefferson was then 44, and had settled hungrily into his role as the American minister in France, "violently smitten," as he wrote, by the charms of The Continent[44]. Madison was 36, twenty years removed from the election of 1808 that would elevate him to the Presidency as Jefferson's successor. Madison would become, in a sense, America's first "Foreign Policy" President, prosecuting the war of 1812 and negotiating with France for the Louisiana Purchase. He was known already, in 1787, as "The Father of the Constitution."

Jefferson begins his letter with a few of the charming literary asides we expect from him: He asks Madison about some nuns he wants to help teach his children, inquires after about a packet of carefully chosen South Carolina rice that has gone missing in the oceanic post, delaying his plans to impress French palates with an American crop. But then Jefferson turns to what he knows must be on Madison's mind, the new constitution. "I like much the general idea of framing a government which should go on of itself peaceably," he says, admiring the elegant balance that emerges so carefully from the pages of the document. The American constitution, Jefferson felt, reflected political arrangements new in the history of human governance, between people and power, between states and the center, between agriculture and commerce. He is, he says, "capitaved" by the details of what he has seen.

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[43] **A few days before Christmas:** Thomas Jefferson and James Madison, *The Republic of Letters: The Correspondence between Thomas Jefferson and James Madison, 1776-1826*, (New York: Norton, 1995) Vol 1. pp, 457-459

[44] **Jefferson was then 44:** Thomas Jefferson and Douglas L. Wilson. *Jefferson Abroad*. Modern Library ed. (New York: Modern Library, 1999) letter to Madame de Tesse, 20 March 1787

Such a system, Jefferson wrote, was particularly appealing to him because it contrasted so sharply with the violent shearing of daily life then underway all around him in Europe. “France, with all its despotism, and two or three hundred thousand men always in arms, has had three insurrections in the three years I have been here,” he marvels. In fact, France’s revolutionary age was only just beginning. The fall of the Bastille was 18 months away; the flight and death of the King five years off. Paris would soon see a time when one riot a year felt like peace. You can’t miss in Jefferson’s letter, and in the others he exchanged with Madison that winter and the following spring, his instinct that the world was changing, that it was being riven by urgent new forces, and that America must be positioned for the fresh order both internally and in her foreign policy. Jefferson knows what this new age demands – liberty – and in that spirit he fires off suggestions for Madison. It is in this December, 1787 letter that he remarks that he “does not like” the absence of a “bill of rights”, a hint that led to an adjustment of historic import.

It is possible to regard the transformations of politics, economics and military affairs over the past centuries, the sorts of bold remakings that tore apart places like the Bastille or built up instruments like the American Constitution, as emerging from a few crucial periods, the sorts of historic turns that mark moments when power makes an epochal shift. It is striking how, in passing through these periods of unthinkable change, America has benefited so much, so fully. The country was, to begin with, born out of the social and political revolutions of the 18th century. The national liberation that pulled Jefferson from his Virginia farm and into politics was the first of the great, revolutionary movements that convulsed and fractured a dozen European powers. France followed America, as did Germany and Italy and soon most of the continent. “The boisterious sea of liberty,” Jefferson called the new political order[45]. It required a strong stomach. Tempests of accumulated social pressures – the Reformation, the Enlightenment, the Scientific Revolution – had passed over one *ancien regieme* after another like powerful waves. America, begun on fresh land and with new ideas inked onto clean paper, had a natural advantage in the situation of her birth. “I think our government,” Jefferson concluded in his letter to Madison, “will remain virtuous for many centuries.”

A second transformation of global order began in the middle of the 19th Century, as Jefferson and Madison’s age ended. Their period had largely been one of *internal* revolutions, as the nations of Europe realigned their domestic orders. What came next were furious contests between these countries. We might think of this new period as starting with the Franco-Prussian war of 1870 and as running, with increasing violence, through to the summer of 1945 and the end of World War Two. In this era, Europe’s statesmen struggled from one tragically collapsed balance to another. The demands of industry and nationalism and ideology and economy could only be reconciled, it seemed, by war, as if it was absolutely necessary to devour the old buildings and the young men before a new order could settle in. The scale of this violence, like the scale of the industry that produced it, defied anything even the wisest minds could foresee. Eventually the entire world was pulled into the fire. "In the autumn of 1919, in which I write, we are at the dead season of our fortunes," the economist John Maynard Keynes wrote after the Paris Peace Conference settled The Great War, dimly aware that an even deader season lay somewhere in the future in the form of another war[46]. During this murderous 75 year run, in the reviving of European and then global fortunes, America played a decisive if reluctant role. As in that first period, she emerged richer, more central, and more modern.

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[45] **“The bousterious sea of liberty”:** Thomas Jefferson to Philip Mazzei, *The Papers of Thomas Jefferson, Volume 29: 1 March 1796 to 31 December 1797* (Princeton University Press, 2002), 81-3

A third struggle, the Cold War, immediately followed the end of this second period. This contest was intensely material and as ideological as any conflict in hundreds of years. It represented a struggle at the level of the most fundamental question of politics: How should life be lived? Two totalizing, uncompromising worldviews were placed in opposition. This 45-year struggle occurred under the threat of nuclear disaster, which gave it an aspect new in human history, the potential for complete destruction. It was possible to find sober-minded theorists pondering problems like this one: "Let us assume that for 10 billion dollars one could build a device whose function is to destroy the earth," Herman Kahn wrote in the 1960s, with a spirit typical of his age in his slick, sickly worrisome masterpiece *On Thermonuclear War*[47]. Yet in this period too, over time, America found herself in an axial role, first carrying one end of the risky fight and then, at the conflict's surprising and jubilant conclusion in 1989, discovering the country was in a position of unprecedented, unchallenged power. As with the two earlier shifts, this one had brought with it an arrangement nearly ideally tuned, yet again, to America's advantages.

I mention all this here because while it may be fashionable to speak of the period just passed as the "American Century" – and to wonder whose century comes next, the reality is that for two and a half centuries, through some of the most violent and wonderful changes in human history, America has had a remarkable run[48]. A senior American military official once asked me, a week or so before he sat with the Chinese President, how best to begin his remarks. "You might say," I suggested, "that America respects what China has done in the last thirty years. To have brought 400 million people out of poverty as Beijing has done is an historic accomplishment. But he must understand that America, particularly in the last intense century, has paid in nearly countless dollars and in the cost of hundreds of thousands of American lives, to establish an order that has benefited billions. The scale of this accomplishment is, by a great measure, historic." America has been an emblematic, profound force. It has been a country tuned exactly to the needs of her age. Three times over. Inevitably, the world now asks: Can this continue?

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[46] **Eventually the entire world:** John Maynard Keynes, *The Economic Consequences of the Peace* in *The Essential Keynes* (Boston: Penguin Classics, 2015)

[47] **It was possible:** Herman Kahn, *On Thermonuclear War*, (Princeton, N.J.: Princeton University Press, 1960)

[48] **I mention all this:** Henry Kissinger, *Diplomacy*, (New York: Simon & Schuster, 1995. See chapter one, and Paul Kennedy, *The Rise and Fall of the Great Powers* (TK London, 1988)

4.

Today the world is entering a new era of revolution. The fourth wave of fresh, turbulent dynamics to confront America since Jefferson gamely predicted those centuries of virtuous prosperity back in that 1787 letter to Madison. Driven by incredible technological shifts and their economic, military and social implications, new forces are beginning to tear into the established global order. Among the most fundamental puzzles now is the problem of an American national mission. What does America seek to achieve in the world? And how? On what basis will the United States secure the chance to continue "peaceably", as Jefferson would have it?

Because the country plays such a central role, these questions' answers will affect the calculations of every nation, of every new force yearning for influence. They represent the crucial background against which we will all live, build businesses, travel and learn. You might feel, sitting in Silicon Valley or Iowa, that such shifts don't matter to you now, but the cold truth is that the international system is unlikely to be arranged, in two or three decades' time, along the lines that bind it now. Too many violent forces are at work. But must this be a disaster? The technological demands of our age are forcing a new sensibility everywhere. Research labs, medicine, science, finance and the arts are all hunting now for a new outlook. The need for a fresh perspective is also reflected in the biggest of all historical questions, the one that will decide if we live in an era of peace or one of fear, uncertainty and tragedy: How is the international system to be ordered?

The idea that the stability of the world system might honestly be at stake right now feels incredible to the generations of Americans born after World War II. A struggle for global order? Real, sharp, bloody nation-imperiling violence? Though we know such traps are a recurring feature of human history, we have been mostly numbed and reassured by the passing of optimistic, fast and prosperous decades. We know mostly a blur of IPOs, of rising real estate prices, and confident growth out of every crisis in our memory. Survival and stability have been, fortunately, the least of the national concerns. The sly aside of Jules Jusserand, the French Ambassador to Washington for 20 years in the last century, about America's position in the world pretty much summed up our views: "On the north she had a weak neighbor; on the south, another weak neighbor; on the east, fish, and on the west, fish."[49] Most Americans now alive grew up relying on the durable institutions and ideas and structures built by the World War Two generation. We ride on their roads, fly into their airports, and use the schools and media they built. We absorbed their habits of consumption, home ownership, optimism and energy. This inheritance produced an historic level of prosperity. It inspired other nations. And – along with those fathoms of fish and friendly neighbors – it assured a position of real world leadership. Since the end of the World Wars, America has fought six expensive smaller wars and lost five. This record appeared to have had little impact on the nation's dominant global position; it did little to unnerve a comfortable sense of national destiny.

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[49] **The sly aside:** Jules Jusserand quoted in George C. Herring, *From Colony to Superpower: U.S. Foreign Relations Since 1776*, (New York: Oxford University Press, 2008), 6

Much of our current confidence can be measured by the astonishing degree to which we embrace the scrambling of even the most elemental parts of our lives, from how we bank to how we drive. Most societies in the past were largely *terrified* of disruption. If you had arrived in prosperous 17th century Holland and proposed to "disrupt agriculture," or radically change people's banking habits, you would have been lynched. Our age is different. Many of the most unsettling forces in our world are ones we encourage, feed and push along. If I had said to you a decade ago – "I'm going to record all of your movements so you can spend less time in traffic." – is that really a deal you would have accepted? But if you use a GPS mapping system on your phone, you have. That Orwell's sick prognostication of technocratic life would be one you'd embrace? That it would describe a desireable *feature* of network life? "You had to live – did live, from habit that became instinct – in the assumption that every sound you made was overheard, and … every movement scrutinized."[50] If I had told you we were going to build a world wide high-speed data system that would, as a side effect, make it simple for children in London to connect with, learn from and then join terrorists in Syria – would you have thought that wise?

The optimistic bumper sticker of our age – that any disruption is good disruption – marks a wonderful feature of the American character. It is, perhaps, to be expected of a nation built by immigrants who overturned their own lives in the hopes of something better. To pull up and leave home for a land where you did not speak the language, knew little of the culture, and faced a blank sheet of the future, demanded faith. You had to believe too: *Any disruption is good disruption*. But no nation, even the most heroically hopeful, is immune from the forces of history. Edmund Burke's old line, that "every revolution contains within it the seeds of evil," runs like a counterpoint through the hopeful music of the age now. America's remarkable spirit does not make the demand for a national outlook, for an American grand strategy, any less real. We're starting to be aware of just how dangerous this age can really be. In many ways, our very confidence and sometimes blindly certain feeling of destiny probably makes it even more essential that we have a sense, as we rest in Silicon Valley or Iowa or wherever, of where we are going, and why.

The phrase "grand strategy" is one that carries a particular meaning when we think about problems of global balance. It means the way in which *all* of a nation's powerful tools of economics, finance, ideology, politics, and other resources can be used, together, in the service of security and prosperity.[51] To get the terms right, we usually talk about "tactical", "operational" and "strategic" levels as we watch the gears of history churning away in war and peace. The "tactical" level is the most practical. It's the choice to use machine guns instead of tanks to secure a street in Kabul, for instance, or to buy up gold for a central bank or permit high-frequency stock trading. Tactics are where policy decisions crunch into reality. The most brutal shocks are first felt tactically: roadside bombs or mis-designed, crashing computer code.

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[50] **"You had to live":** George Orwell, *1984,* Signet Classic Edition (New York: Signet Press, 1961), 3

[51] **The phrase:** For a good general introduction to the problems of grand strategy B.H. Liddell Hart, *Strategy*, (New York: Faber & Faber, 1967); Paul Kennedy, ed., Grand Strategies in War and Peace (New Haven: Yale University Press, 1991); Edward N. Luttwak, Strategy: The Logic of War and Peace (Cambridge, Mass.: Belknap Press of Harvard University Press, 1987); Peter Paret with Gordon A. Craig

A level above the problem of tactics sits the question of operations. It's here where decisions are made about just how various levers of power might best be moved. Should we send bombers to slow Iranian proliferation or rely on cyber attacks? Will tax dollars fix our infrastructure faster than tolls? Macarthur's landing by surprise in Incheon on the morning of September 15, 1950, Operation Chromite, was an operational decision. "Within five hours, 40,000 men would act boldly, in the hope that 100,000 others manning the defense lines of South Korea would not die," he thought before the battle. "I alone was responsible for tomorrow, and if I failed, the dreadful results would rest on judgment day against my soul."[52]

Policy gets implemented through operations. It is the level where clever bureaucrats and parasitic office politicians prey, where they can most easily undermine the ambitions of visionaries. But it is also the place where inspiration works on the will and passion of companies or armies or research labs. Server farms, data mining algorithms, trade treaties—these are the operational chessboards of our era. Operations is where the bolt tightening for revolutionary change occurs. It is intense, relentless operations that ensure stability in the face of shock or growth or collapse. "The exploding popularity of Internet services has created a new class of computing systems that we have named *warehouse-scale computers,"* the Google data engineers Luiz Andre Barosso and Urs Holzle wrote in famous, revolutionary paper several years ago as they described the operational revolution that lets Google serve terabytes of data, instantly, every day.[53] The massive data centers they had built, they realized, are so large that they are nothing less than computers that are the size of massive buildings. Solar fields are their power supply; entire rivers are their cooling tubes. And they enable nothing less than magic: instant knowledge, connection to distant lands, a constant picture of what humanity knows. This is the growing, heroic scale of operations now.

Above the operational and tactical levels is what we call the strategic dimension. It is here where overall design is considered and moved. Without it, operations and tactics are incoherent. Strategy imagines how whole structures like nations or

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and Felix Gilbert, eds., Makers of Modern Strategy: From Machiavelli to the Nuclear Age (Princeton, N.J.: Princeton University Press, 1986) and Sun Tzu, "The Art of War", Filiquarian (1986)

[52] **"Within five hours":** Douglas MacArthur, *Reminiscenes* (Naval Institute Press, 1964), 354

[53] **"The exploding popularity":** Luiz André Barroso and Urs Hölzle, *The Data-Center as a Computer* (San Rafael: Morgan & Claypool, 2009)

corporations might be directed in the service of really ambitious goals: European peace or the fiber-speed transformation of telecommunications or billion-user financial grids. It's thin air up at this level, honestly, by which I mean that at these elevated heights you see the most ambitious athletes of human power at work: The maniacal CEO, the egotistical statesman, the mad dictator. Hundreds of millions of lives are in play; even more in some cases. By a "grand strategy" we mean the very peak of this sort of consideration. It represents, in the world of global affairs, the construction of a strategic idea that suggests how military, diplomacy, markets, and politics might be harnessed, firmly, in service of a singular aim. Grand strategy is a basic stance towards the world. If it works, it liberates creativity and national energy. It sets a clear direction[54]. It protects against the steep price of surprise. Grand strategy holds, in a single concept, the nature of their age and our plans to use that nature for the aims – security, prosperity – that gird a nation's life and decide its future. Like it or not, we all live under the umbrella raised by grand strategic choices.

"Containment" of the Cold War period, "Balance of Power" from Europe's 19th Century Age of Revolutions, or the "Tributary Alliances" that shaped a thousand years of Chinese power – these were all big, essential organizing grand strategic concepts. They shaped security decisions for durable empires. Each balanced ideal aims like freedom or the preservation of dynastic continuity against technological revolution, economic crisis, ideologies and the numberless other forces that can crack empires. Each idea reflected the demands of the age, and as a result each tells us something about power in those eras.

The Chinese strategist General Liu Yazhou observed a few years ago in a widely circulated essay, perhaps a bit too eagerly, "A major state can lose many battles, but the only loss that is always fatal is to be defeated in strategy."[55] There's something a bit cold in that line, but it expresses a hard truth. Massiveness and deep commitment to a particular, flawed view of the world can turn strength to weakness in a heartbeat. In our connected age this sort of reversal can happen with a particularly devastating speed. In the past, traditional measures of power – tanks, airplanes, national wealth – declined or rose as a gradual process. It took years for Genoa to fund and build an expeditionary force to gut Venice's Adriatic designs. Decades passed as Germany built her naval fleet. But in our age, such slower-moving measures are of limited use. Network systems rise and fall with astonishing speed. Once-successful firms in technology, companies like Wang or Fairchild Semiconductor or MySpace, found themselves unseated in months, after years of growth. New firms can emerge as if from nowhere and erase once cherished balances, demolish once strong names. Google unseats Britannica. Ride-sharing firms vaporize taxi medallion economics. "Change or die," the old computer programmer's line, runs on a very fast clock in a world of constant innovation, and it applies to nations and ideologies, your habits and mine. Think of General Liu again for a moment: "A major state can lose many battles." Those five lost American wars over the last 50 years weren't fatal. They wore only a bit on our national pride and our position because they weren't *strategic* losses. But our next errors, which may come without the firing of a single shot, could be far more costly because of the slick, strategic slope on which we are now moving. "It is one thing to struggle heroically to get out of danger," Liu wrote in another manifesto. "But it's better to see the danger before it even begins to sprout."[56]

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[54] **If it works:** Hal Brands, *The Promise and Pitfalls of Grand Strategy*, (U.S. Army War College Strategic Studies Institute, August 2012); Jennifer Mitzen, "Illusion or Intention? Talking Grand Strategy into Existence", *Security Studies*, 24:1(2015), 61-94

[55] **The Chinese strategist:** Liu Yazhou, "Da guoce" on aisixiang.com (2004)

5.

Six paradoxes trace the immensity of the gaps we now face.

First: We find ourselves confronted, almost daily, with an unnerving mismatch between our interests and our means. The most powerful nation in human history finds itself unable to achieve even simple military and diplomatic goals.

Second: A global crisis of faith in our institutions is now under way. No significant institution, from the US congress to the Euro to your local newspaper, is more trusted than it was a decade ago. Many of our most essential institutions seem destined to be victims to the logic of "forced obsolescence" that makes our phones, our cars and our televisions of ten years ago feel like antiques.

Third: The connected age lets us see and measure, with historic precision, the problems we face – yet we can do almost nothing about them. Global warming, wealth inequality, species destruction, nuclear accidents, terror killings – we can see all of these in rattlingly sharp detail, instantly, miraculously. Watch the Fukishima reactor meltdown! See BP oil leak into the Gulf of Mexico in HD! The rise and fall of markets, the moves of distant wars, rivers of refugees appear almost as if we were tuning into a football game. *But we can only watch*. "Hey, do something!" we want to shout as we see financial or ideological or religious chaos spill towards us. But nothing seems to move; and what does move makes the problems worse. This impotence of being "just spectators", works like a nutcracker on the credibility of the people and institutions we expect to fix these problems.

Fourth: Many new challenges exhibit a worrying non-linearity. Small forces produce massive effects. One radical teenager, a single mis-placed commodity order, or a few bad lines of computer code can paralyze an entire system. The scale of this whiplashing grows every day, because the network itself grows, it turns pindrop noises into global avalanches. Dangers, accidents, crises were once local. A drought in California was, largely, a drought in California. A slowdown in China hit Shenzhen or Shanghai, not South America. Now, as networks overlap and influence each other, crises cascade at a new, stunning and comprehensive scale. And while we know effective foreign policy or politics or economics can't be improvised, the speed of the networks now outstrips the velocity of our decisions – even as citizens expect reactions at the ever-faster pace of their own connection. Think about the speed with which answers are expected in almost any job; all those pressures are yet more extreme at the highest levels of government.

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[56] **"It is one thing to struggle":** Liu Yazhou, "Tan junshi gaige yu quojia anquan wenti"

Fifth: Though the changes working through the global order depend generally on innovation rooted in American institutions, corporations and ideas, there is now an uneasy sense: This order is slipping from American control. Look back just two decades. Then America stood as the sole superpower, the global leader in finance and economics and technology – and embracing other nations into rules we'd written. Today, allies and enemies alike wonder: Is global order is collapsing? At what speed? And: What comes next?

And, sixth, perhaps obviously to you by now: We don't know where we're going – and our leaders don't seem to have much of a clue either. Though nations are capable of adjusting activities at the tactical and operational levels – devising better drones, sharper monetary policy – we've still set no clear strategy. American negotiations are aimed now at small problems, not the heart of the issues we face. In what area of our national security today do we appear more confident than a decade ago? What nation does conduct the confident, creative, energetic an global negotiations of the sort that mark a power with a clear sense of direction?

Taken as a whole, these six paradoxes represent nothing less than the potential unbuckling of the greatest power the world has ever seen. And because the whole world is connected to that power, still more of the system may yet be rattled apart. We are surrounded today not only by fish, but enmeshed in a world of connective links that are the tissue of our real power – and a source of danger. *A sense of direction.* You have to feel as you look at this rotten, dangerous landscape we've made for ourselves in recent years. *We need a sense of direction.*

6.

In response to these challenges, America's leading figures are now proposing a range of ideas that don't honestly resonate with much confidence. Really they are having a debate about if they should use more of the old style of power or less. What they aren't doing is grasping the nature of the age. So no clear, imaginative and coherent picture of where we might head yet exists. In fact, as you're probably starting to suspect, the very best ideas of our incumbent figures may yet make the world more dangerous, may firmly and enthusiastically pull us into connective webs of danger and waste and mis-calculation they don't see. With our Seventh Sense we'll be able to spot and think about many of these dangers in a new, better and more rational way, free from the blinders of habit, but we should know what the world looks like to the blind.

Two approaches are predominant among the most respected American elites, who – as leaders of the leaders of the establishment represent an important group for us as we consider what *not* to do. The first approach proposes something known appealingly enough as "Smart Power."[57] The concept was summarized most sharply by President Obama in 2014, when he said American policy ought best be guided by this tight precept: "Don't do stupid stuff.[58]" And while it is hard to disagree with this sort of charming, solipsistic formulation – there's not a long list of politicians supporting a strategy of "Do stupid things"? – "Smart Power" is no more a foreign policy vision than "Good Weather" is a strategy for farming. It suggests in some way there is no need for a strategy at all. Faced with a problem, just make a smart decision. "I don't really even need George Kennan right now," Obama remarked at one point during his presidency, dismissing the need for a strategist of real stature – and, by implication, the need for any strategy at all.[59]

Such a stance reflects an instinct that the great strategic question of our day – the future – has pretty well been worked out. In such a view of history, all we need to do is not screw this up too much. The root of this idea is an absence of a long view of history and a discomfort I think about the application of cold power. There's a misplaced confidence at work here, an assurance that American-style power, our model of politics and economics, is the best, final and only answer to the question of how the nations of the world might be best organized. Americans need, in this telling of history, only patience. The world will catch on. And I suppose that if you grew up in the United States after World War Two, such a vision of the world certainly would be consistent with your own experience. The problem is that such a comfortable posture is at odds with nearly any book of history you might pick up, from *The Peloponnesian Wars* to Churchill's *The Hinge of Fate*, all of which will remind you in the most violent terms that liberty and freedom demand struggle and defense; that epochal changes come whether we want them or not. Also that nations that look invincible can find themselves nearly unwound in an historical instant. Great Britain mastered the globe in 1937; three years later she was gasping for air; three decades later she was an afterthought. "Freedom is the sure possession of those alone who have the courage to defend it," Pericles told his Athenian audience nearly 2500 years ago in as they mourned a full year of war-dead sons and fathers – and no peace yet in sight.[60] Or, Churchill, famously: "Never, never, never, never give up."[61] We should be embarrassed to hold "Don't do stupid things" against these mottos.

Admiral Hyman Rickover's famous advice as he surveyed the nuclear navy he'd built in the last century has it about right at every level: "To find meaning in life one must be willing to act."[62] This is as true for nations as it is for each of us. We must be willing to act. It's easy to be sympathetic to the desire for less action. Nothing we've done in recent years seems to be working. But, as we'll see, that's because we've been using the wrong tools. Our enemies? They are developing the right ones. They are willing, and eager, to act. To travel the world now is to encounter in nearly every capital figures who have a different reading of history or the future of the global order. They see the world not as some ready-to-eat American political order but rather as a churning, uncertain, urgently worrying vortex. They wonder: What might we build? They look at America's global leadership with the hungry eyes of an Internet startup eyeing an old, unconnected market. "Don't do stupid things," is an invitation for these forces to poke at the world, to take risks, and to remind us that so much of what later seems brilliant appears stupid or insane when it begins.

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[57] **The first approach**: Joseph S. Nye, Jr, "Get Smart", *Foreign Affairs*, July/August 2009

[58] **The concept was summarized**: Jeffrey Goldberg, "Hillary Clinton: 'Failure' to Help Syrian Rebels Led to the Rise of ISIS" *Atlantic Monthly*, Aug 2014

[59] **"I don't really even need"**: David Remnick, "Going the Distance: On and off the Road with Barack Obama", *The New Yorker*, January 27, 2014

[60] **"Freedom is the sure possession:"**

[61] **Or Chuchill:**

In the years since "smart power" became fashionable, another proposition has emerged from a different group of elite thinkers. It is, in a sense, the flipside of that strategy-free posture of passivity. It was distilled by a well-regarded cluster of academic foreign policy specialists in 2012 as America began withdrawing from Iraq: "Don't Come Home America!" they called their essay. As they explained, "The United States' globe-girding grand strategy is the devil we know. A world with a disengaged United States is the devil we don't know."[63] According to this logic, the country's globe-striding posture, while expensive and exhausting and admittedly inefficient, is a crucial element of our rich national power. Yes, we spend 15% of our GDP on security activities, but we reap far more in return: Access to the best minds in the world, a secure life, a culture of open debate and personal liberty.

The problem here is that "Don't Go Home!" feels, for the most part, like a costly groping after something to hold onto. Articles and speeches and policy ideas that flow from this hopeful camp have a shimmering and expensive unreality, one that American domestic sentiment would be unlikely to support for long and that jostles against our experience of recent years. Are more aircraft carriers, overseas bases and jet fighters really the cure for the dangers we face? The ideas of this group have an appealing simplicity, or maybe I should say an appealing *familiarity*, because they echo instincts about power that were once true. The energetic engagement with the world they suggest is attractive, but America has work to do at home and – we can all see – the ambitious overseas tasks of recent decades have not, in any event, been really finished. Instead of a confident, conclusive, "Job well done!" comfort we still sweat with nervousness. *What is coming next?* After all the blood and treasure, after 850,000 soldiers in Afghanistan and $3 trillion dollars – we were left with expanded swamps. Like "Don't do stupid things", "Don't Go Home!" tells us little about the picture of world order that might emerge in the future. (It also tips us to this: Probably as a general rule no credible grand strategy starts with the word "Don't".)

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[62] **Admiral Hyman Rickover:** Rickover speech date TK

[63] **As they explained:** Stephen G. Brooks, G. John Ikenberry, William C. Wohlforth, "Don't Come Home America: The Case Against Retrenchment" *International Security*, Volume 37, Number 3, Winter 2012, pp. 7-51

So we should say it coldly: We have, as of yet, no strategy. We have no shared picture of the world as it might be. You. Me. Our leaders. None of us. And the experience of other, fast-collapsed empires should way on us. "The struggle to survive," the historian John Darwin has written of the British Empire, "was waged in an age of revolution: a Eurasian revolution that cumulatively (but very quickly) destroyed almost all the global preconditions on which the British system had depended since the 1830s."[64] So in our age. Many of the essential determinants of American power are being revolutionized by new, connected forces. The world syste will change in coming years. Our only question is will the changes reduce us as they once shrunk Britain, or will we draw on them to establish a longer, more durable system. At the moment, in a time of fascinating explosions of ideas and insights and connection, the American foreign policy approach is deeply and strangely unplugged from these risks and possibilities. The world has changed – is changing profoundly – from the one in which most students and practitioners of international affairs were educated. And here's the reality: Nothing can stop this change. The last two decades have brought massive and persuasive change in so many disciplines. And in foreign policy? In the consideration of problems of war and peace which, if not handled properly will rain tragedy on every other effort we might have in mind? Not much has changed. Except this: A growing sentiment of pessimism that suggests maybe America can't hold on. Great powers get one century to rule, the logic goes, and America's is now up.

It's not merely that we lack a "China Strategy" or a "Middle East Strategy", it's that we've failed to discern an overall grand strategy that would produce a coherent answer to the question of what to do about China or the Middle East – to say nothing of how those forces might be played off another with clever diplomatic harmony like instruments in a symphony. It is hard to know if this puzzlement represents a failure of imagination or of nerve. Does it mark arrogance or confusion? Or just an ignorance of the profound, revolutionary nature of the forces now at work?

Today when leading officials remark that their main concern is a rising China or revanchist Russia or that we live in a world where, as Secretary of State John Kerry said, "terrorism is the principal challenge," they are missing the point. The fundamental threat to American interests isn't China or Al Qaeda or Iran. It is the evolution of the network itself. Constructed of switches, chips, data, code, exploits, sensors, AI bots, financial instruments, trade, currency and more, the network is itself a weapons system. Its architecture, a wonderfully humming maze of change and contagion and instability, determines its terrifying dangers and marks its vast opportunities[65]. It touches – decisively – each and any particular problem we would care to name.

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[64] **"The struggle to survive":** John Darwin, *The Empire Project*, (Cambridge: Cambridge University Press, 2009) 477

[65] **Its architecture:** For an excellent overview on the politics of contagion, see Tony D. Sampson, *Virality*, (University of Minnesota Press, 2012)

Terrorism, we have to understand, is merely one example of network danger and power. So is China. And Russia. And these may not even be the most dangerous or devastating network battles that will take place in our lives. It's a commonplace to say now that the international system is in the greatest period of upheaval in more than half a century. But often this sort of remark is accompanied by a list of moving pieces that seem to be unconnected: China's rise, the return of Russia, changes in the Middle East, globalization and then reverse globalization. "Who would have thought the post Cold War era, which was supposed to be characterized by 'softpower' and economic interdependence would be so violent?"[66] one team of scholars recently wrote, reflecting the genuine wonderment of many "experts" who failed to predic the end of the Cold War and then, largely, the nature of what has come after. Who would have thought? Well, as we'll see, anyone who understands networks.

Thomas Hobbes – the 16th century British philosopher long considered an early master of the analysis of cold, brutal power – once put it simply enough: Nations, he said, *need* to be mastered. "During the time men live without a common power to keep them all in awe, they are in that condition which is called war," he wrote. "Such a war as is of every man against every man."[67] A precondition of peace, for Hobbes, was that some country or force or tribe decisively grips a region, an empire, even the globe. "A common power to keep them all in awe," fulfilled a need for order. In our connected age, the common, awesome power is already here. It is networks. The battle now is for and on of this genuinely historic, still curious force. They will be attacked, throttled, trashed, accelerated, used, upgraded, won and lost and inflicted on each of us and our security by those with a new sensibility. To feel the world with a Seventh Sense will reveal a whole new landscape of power; it will permit us to see the fibers of a new age and then weave them into how we see and think and, finally, act. That essential, decisive terrain of our new age is, to the "Smart Power" and "Don't Come Home" crowd, still largely invisible and, anyhow, incomprehensible.

7.

Just as rivers or mountains or air currents drove commerce and combat in past eras, networks will strongly, probably decisively, influence the dynamics ahead. Today you can't, after all, operate on the rivers or mountains or in the skies or space without lively, near-instant connection. The space these interlocking networks occupy represents a new geography. It is growing every day, as if it were a giant new continent fusing together under the surface of the sea. We are, as the team at Gee! Do! discovered, moving from a world in which nations battled nations to one in which nations battle networks. And a world where networks battle networks. In coming years, networks will surely break nations, as once nations broke each other. It is linked the systems of trade and economics and biology and data that will create the conditions for the practice of diplomacy in our future and, when that fails, the landscape for decisive military or economic moves. Mastery of these systems will provide a rich set of creative ways to increase our security, far more effective than the unilateral and inconclusive military force we largely turn to now. A sensibility for networks will unmask developments that look friendly as in fact deeply dangerous. It will reveal that some of what may appears a threat is in fact an key to security. But this instinct for seeing differenlty has largely not settled upon our leaders.

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[66] **"Who would have thought":** Robert Hutchings and Jeremi Suri, *Foreign Policy Breakthroughs: Cases in Successful Diplomacy* (Oxford: Oxford University Press, 2015) p. 2

[67] **"During the time":** Thomas Hobbes, *Leviathan*, (Cambridge University Press, 2002) 88,

Already the emergence of network power is producing strange collisions. Iran versus Twitter. The hacking collective Anonymous striking against Mexican drug lords, terrorists and Russian television. Tor versus the NSA. The use of financial networks to crack human trafficking webs. Biological surveillance sensors in cites used to fight disease contagion spreads – a network of machines laid against a network of bugs.[68] I mean this at nearly every scale. Waves of networked autonomous armed drones, for instance, may be among the greatest tactical military threats of the next few decades; the only hope of defense against them will be still better-enabled, self-thinking and learning defensive meshes, themselves capable of response at a pace dictated by links of machine learning and communications. Writing in 1890, the great American historian and admiral, Alfred Thayer Mahan, produced "The Influence of Sea Power upon History" in which he attempted to convince an age obsessed with land forces of the enduring, decisive power of armed ocean fleets. Hannibal's smashing attacks against Rome, Mahan wrote, or Napoleon's failure against England – in each case "mastery of the sea rested with the victor."[69] Our future will bring, almost certainly, a study of the "Influence of Network Power upon History". Here is a a line as true in diplomacy as it is in business or politics: Mastery of networks – the links of data and trade and security information and finance and others – will rest with the victor.

For the most part, the order the American and European world has been accustomed to since the Treaties of Westphalia ended the Thirty Years War in the 17th century bottled the power to make large-scale change inside states. Nations held a monopoly on the use of force, in a sense. They used it. Violent, state on state struggles were the defining events of global affairs. In such a world, the country with the most power, the greatest material reserves, the strongest sense of national destiny, also enjoyed the most security – and the most options. A few hundred thousand British imperial troops overmastered India in this fashion. And a handful of really powerful nations struggled over centuries for dominance of the whole system. Statesmen sought, and even occasionally achieved, temporary balances between the lurching and violent resets of wars that erupted like a sort of pressure-release valve for the over-inflated ambitions, nationalism, and hatreds that steamed up between nations.

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[68] **Biological surveliance:** The foundational text of network battle thinking is John Arquilla and David Ronfeldt, eds. *Networks and Netwars: The Future of Terror, Crime, and Militancy* (Santa Monica: RAND, 2001). For a discussion of the biological issues, see Eugene Thacker, "Living Dead Networks", in Fiberculture Journal No. 4 (2005)

[69] **Hanibal's smashing attacks:** Mahan, *The Influence of Sea Power upon History 1660-1783* (Boston: Little, Broan & Co. 1890), iv

On our modern networked systems, however, power is different. On fast connected webs of nearly any sort, tiny forces applied can have immense impacts that leap from one domain to another. One erroneous commodity trade can snap-scramble a marketplace – and then tip a bucket of chaos into nations, companies and trading firms, One hacker, sneaking into the back-door of a computer network, can – to us a term of art – "brick" a nation's expensive security systems into devices as lively as a doorstop: STUXNET spinning Iran's centrifuges into planned madness, for instance.[70] Here's the essential, dangerous insight about safety in a connected world: It once required a big industrial force to defeat another big industrial force. Such grinding victories required time. They could be prepared for. They could be avoided, even. No more. Even the most formidable physical structures of our world – militaries, markets, governments – can be rendered swiftly immobile by virtual attacks on their connected nerve systems.[71] These strikes – or, in some cases, these *accidents* – baffle and then paralyze at network speed, by which I mean less time than it took you to read this sentence. When the American national security strategy speaks of a "long struggle" against terrorism or a rising China, it doesn't acknowledge how fast some of the turns ahead may be.[72] Yes, a decades-long battle for control of essential networks and platforms and protocols lingers ahead. But I fear some of the changes ahead will whiplash us with their speed. Generals in World War One lamented that the whole war might have been prevented if diplomatic communication had been conducted at the stately speed of the horse-carried message. It was the damn velocity of the telegraph that baffled the judgment of statesmen, they claimed. Figures whose every instinct runs at a pace far slower than what the age demands were then – and are now – a menace.

The great 20th Century theorist of political realism, Hans Morgenthau, once referred to nation states as "blind and potent monsters."[73] He felt a sort of nervous evil as he studied the moves countries made on the stage of world history. Some of this unease was surely a result of his own life, marked by a lucky escape from Germany in 1937, as Hitler was finally perfecting a national machine of lurid and murderous potency. I suspect Morgenthau would have been terrified now by the always-on, all-seeing connected mesh that encloses us. Connected forces move at times like a potent and capricious monster too, smashing businesses or national economies or ecosystems with little useful warning, and anyhow with a merciless and unstoppable efficiency. Connected, surprising terrorism has cost trillions to fight; linked-up network businesses have demolished, surely and even gladly, trillions of dollars of old profit sources with their cold, clicking efficiency. Skype blitzes hundreds of billions of dollars of long distance telephone profits, for instance. And replaces it with free. Amazon, in the space of a few years, cripples marketplace ideas built at the cost of trillions of dollars.

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[70] **One hacker**: David Raymond, Tom Cross, Gregory Conti, Robert Fanelli, "A Control Measure Framework to Limit Collateral Damage and Propagation of Cyber Weapons", *Proceedings 5th International Conference on Cyber Conflict* (NATO CCD COE Publications, Tallinn 2013).

[71] **Even the most formidable**: Daniel Geer, "Heartbleed as Metaphor", *Lawfare* Blog April 21, 2014

[72] **When the American**: See 2014 US National Security Strategy

[73] **The great 20th Century theorist**: Hans Morgenthau, "The State of Political Science," *Politics in the Twentieth Century Vol. 1,* (Chicago:University of Chicago Press, YEAR HERE)

The world we're entering into now, one of constant, sensor-filled data streams that give us a real-time feeling for everything from the temperature of your car before you get in to the pace of your heart as you sleep, means the potent, network forces of our day are not "blind" as Morgenthau's states were, but gifted with an exactness of vision. They see everything, always, more than we or our leaders do. They see it constantly. They never forget. Networks seem to have an irresistible and amazing energy that impels them to find and then exploit pin-holes. Think of Al-Qaeda coolly regarding the American airline network in 2000, for instance. Or rising powers now poking at weaknesses in the international order that we've not yet begun to consider, let alone patch up. Whether confronting mobs of network-organized terrorists or cascades of computer error, we often discover the unnerving truth that on these connected systems there is no plug to pull.

Networks of one sort or another are hardly new in international affairs, even if the sheer scale and speed of our modern systems is totally, revolutionarily fresh. The spiderwebbed tendrils of the Ganges River, for instance were a network that fed the Mughal Empire in the 16th and 17th centuries.[74] The Yangtze and the Yellow and the Mekong river systems each marked out vital webs that carried wealth and knowledge into a half-dozen, spectacularly rich Chinese dynasties. Egypt and Mesopotamia developed great powers that endured for centuries along the Nile and the Euphrates. Later, networks of trade overlaid the Mediterranean, which became the heart of the wealthy Carthaginian, Roman and Byzantine empires. And the greatest geographical empire in history, Great Britain, was nothing if not a network power, run on sea lines. Waterways, for centuries, pulsed with power. They were vital for trade, essential in war and crucial for national freedom.

Network empires emerged on land too, assembled from connected webs of politics, of silk and tobacco and gold, or from shared religious passions. These sorts of networks, sometimes as thin as the trail of a single adventurer like Marco Polo, carried promises of prosperity (and intimations of violence) as they spread. Baron Antoin-Henry Jomini, Napoleon's inspired tactical accomplice, was onto something when he remarked that it was the interior, networked lines of communication and logistics that had decided and delivered victory for history's great empires. "Methods change," Jomini observed, "but principles are unchanging." The skeins of links running *inside* national war machines were as essential for security as any ability to strike out – a lesson Jomini and Napeoleon expensively re-learned at the end of their gasping supply lines in Russia in the winter of 1807.[75] In our own day, jet-meshed networks, commercial webs, satellite links and finance platforms span the omnipresent routes of America's global reach. So as we consider the information networks evolving now: the growing connected world that is the largest, fastest, most comprehensive network in history, we should ask ourselves the question Jomini might have raised: Will an even greater empire be based on control of information-powered networks?

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[74] **The spiderwebbed tendrils:** Peter Turchin, "A theory for the formation of large agrarian empires"; Jean-Paul Rodrigue, Claude Comtois, and Brian Slack, *The Geography of Transport Systems* Routledge 2006 p. 10-15

This new world of connectivity won't immediately devour the old. In fact, the classic and the revolutionary will contend for some time, side by side. Cyberweapons and nuclear ones in a strange dance, for instance: Imagine that you're ruling a country with no hope of building your own platforms for medicine, finance, information or security.[76] You will be, as a result, uneasily and permanently dependent on the nations or groups that do control these elemental, algorithmic and efficient tools. If you're running a medium-sized country there's no chance your own IT industry can develop a search engine with the reach and fluency of Google; or a cybersecurity system with the omnipresence of some Chinese database. Might this make you more eager for nuclear weapons? For an atomic hedge against the day you find yourself threatened with national unplugging? Networks, we'll discover, don't lift us above the old conflicts so much as they complicate them. They fill the old hatreds with new fidelity; sharpen the old grudges and make it easier than ever to slap at the world when you're angry. While it is tempting to say that we've moved from a world of "cold weapons" like planes and tanks to a world of "hot weapons" where digital light pulses and biological infections will prevail, really it is the strange blending of these cold and hot systems that is so interesting, so dangerous. Ever more precise exploding iron bombs, made from a fusion of GPS data and TNT, will be a part of our future, as will pathogens tuned by computer and delivered according to network intelligence about where a contagion might best be started.

Orwell's well-worn line – "The history of civilization is largely the history of weapons" – settles uneasily onto a networked world.[77] The networks are, so clearly already, becoming weaponized. And a great strategist should know and use the materials of his day. Napoleon had a gunpowder-burn familiarity with his artillery; Mao possessed a wizened guerilla sensibility. The electric, shifting and shocking materials of our global networks are going to be used in pursuit of power anyhow, so we had best consider how to become fluent with their real nature, how turn them to our advantage – and ideally find a way to use them to so profoundly change the rules of conflict that hurried, unconsidered and useless reaction will be all our enemies can manage. Over the centuries shifts in power and wealth were achieved by armies, by naval and air attacks. Now it is the ownership and use of connection, of networks and machine intelligence that will deliver real, perhaps even final, leverage.

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[75] **The skeins**: John Arquilla and Ryan Nomura "Three Wars of Ideas about the Idea of War," *Comparative Strategy*, 34:2 (2015), 186

[76] **Cyberweapons**: Mary Kaldor, "In Defence of New Wars," *Stability*, 2(1) 2013: 4, pp. 1-16,

[77] **Orwell's well-worn line**: George Orwell, "You and the Atom Bomb" in *George Orwell: In Front of Your Nose, 1946-1950*. (Nonpareil Books 2000) 7

If the strategic aim of Europe's leaders after Napoleon's violent emergence and defeat was to restore a balance of power, if America's grand strategic purpose after World War Two was the containment of the USSR and her totalizing ideologies, nations now must try for positions of security and for command during the uneasy transition ahead. The wellbeing of the whole system becomes a concern; entities, protocols and ideas that threaten the system's health are the most urgent dangers, even as they represent seats of potentially historic power. We should ask: How is it that international cooperation occurs in an age of connection? Will it happen through slow, incremental movement? In sudden bursts? In fact, the routes to cooperation are rarely easy in any age. They involve overcoming old bureaucratic ideas, deeply held instincts of national interest, broken and humid and sometimes murderous psychological needs – all while accepting a new picture of power – and fresh risks and responsibilities. Our problem now, even in the face of these snapping traps, is to define a clear vision of our future security – and then to make a path to get there. No route exists today. "Originally, there were no roads in the world," the Chinese writer Lu Xun observed in a famous story at the start of the last century. "It is only by walking on them that paths are made."[78] Ours is an age of first steps.

The social scientists John Padgett and Walter Powell, after considering examples of epochal, collapsing change in political and biological systems of all sorts – Renaissance finance markets, coral reefs, innovation clusters, and others – summed up their conclusions in a little koan-like package of logic: "In the short run, actors create relations. In the long run, relations create actors." [79] The nouns we worry about now, and the ones we hope for, take their meaning and their risk and energy from relations. Your genome connected is different and more hopeful than it is alone, unplugged, slipping into cancer. This idea that relations create actors is a powerful basis for a new, enduring – even decent – grand strategy for an age of revolutionary connection. It should also offer a check against some of our horrible miscalculations: America invaded Iraq, for instance, intending to replace one state with another. Instead we replaced a state with a network – and not one that we controlled. That web still resists our old habits of control. Relations of family and faith and clan link and activate murderous, relentless actors. The super power had all the nouns: Tanks, planes, soldiers, money. But we did not have the networks. We could not create relations. No move of ours held for long. We were like the team JIEEDO – trying to defeat the wrong thing entirely.

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[78] **"Originally, there were no roads":** Lu Xun, "My Old Home" in *Diary of a Madman and Other Stories* Trans. William A. Lyell (Honolulu: University of Hawaii Press, 1990.) 89–100, though the translation of the line here is my own.

[79] **"In the short run":** John F. Padgett and Walter W. Powell, "The Problem of Emergence" in *The Emergence of Organizations and Markets,* Princeton University Press, 2012

As a start let's at least fix the weird language of our current foreign policy world: We don't live in what they like to call a "Post Cold War" era anymore. (Who, after all, called the Enlightenment the "post-Feudal era"?) We live in what is probably best called "The Age of Network Power." A world of connection is responding to a powerful logic of its own. It builds new platforms, sometimes defined by users or by technology or by the way in which currency or weapons move. Melvin Conway's deep engineering insight was right, the design of networks does affect our real world. Even now it is shuffling us into "convergence" and "divergence" clubs. What is next is the struggle to decide who is in which club. What businesses will win? What technologies? Which ideas? Our only chance will be to learn a new instinct for just how power moves on networks. And it's to this that we will turn now.

Part Two: The Seventh Sense

Chapter Four: The Jaws of Connection

In which the Seventh Sense explains the strange, new way power behaves on networks .

1.

The Envoy, Frank Wisner Jr., had gotten the phone call on a Thursday, late in the afternoon, and within a few hours he was on a plane. It was an unusual request from the White House and from the State Department – and though he was a man who had lived a life of many unusual requests, he knew that this one had a certain significance, a *weight* you might say, if you were the sort of man who measured such things in human lives.

The Envoy was such a man. His father, Frank Wisner Sr., had been one too. Senior was one of the most famous and effective of America's Cold War spies. He'd run the Office of Special Services in Southern Europe during World War Two and then built operations for the Central Intelligence Agency in the years after. He was a tough man, from a generation of Americans that had fought and won wars and who, unquestioningly, weighed their actions in human lives. As a spy in Romania in 1940, Wisner Sr. had watched the Red Army, like some sort of sick machine, round up and then execute scores of his friends. The course of his life was set. "Wisner landed like a dynamo," William Colby – a future CIA director who worked for Senior – observed. "He started operating in the atmosphere of an order of the Knights of Templar, to save Western freedom from Communist darkness—and war."[80]

Frank Wisner Jr., was known too as a dynamo. He was 72 in the winter of 2011 when the White House called. He'd had already a storied career as a diplomat, following a rough trace of his father's man-on-a-mission trajectory, also with a bit of that secretive Knights of Templar feeling: Princeton, Vietnam, the Philippines, the halls of the State Department in Foggy Bottom. Wisner had become the first phone call for some of America's leading corporate figures when they found themselves billions of dollars backwards in some strange land, even as he'd remained closely in touch with the most explosive policy puzzles. Iran. North Korea. He was a voluble and opinionated man, but somehow also discreet, exact and patient. The combination made him at once totally reliable and a great deal of fun. He had been, over the years, a warm and personable figure in my own life, the sort of man who took the long view of any problem, who lay his hand comfortably on your knee with reassurance when some promise came undone and threatened a bit of chaos. He was like an ideogram of reliability: Bukly, bald, coiled, loyal. He'd seen it all, you felt.

Frank Wisner Jr. had served as Ambassador to Egypt for half-a-decade in the 1980s. Almost inevitably, his careful manner and easy charm led him into a close relationship with Hosni Mubarak, the Egyptian president. Mubarak was an urbane former fighter pilot who had come to sudden and surprising power after the assassination of Anwar Sadat on a calm afternoon in October 1981. Wisner arrived a few years later. Though not quite a friend, Wisner had cultivated a directness at least, with Mubarak. He'd become a mirror in which the Egyptian president might see how different stances towards America or Israel would appear to the rest of the world. So when, in the winter of 2011, the White House saw Mubarak facing waves of unimagined protest, at a moment when it looked like the Egyptian president would become the latest head of state to topple amidst the accelerating discontent that would be known as the Arab Spring, they sent Wisner with a message for Mubarak: *No killing – and it is time for you to retire.*

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[80] **"Wisner landed"**: William Colby, *Honorable Men: My Life in the CIA* (New York 1978), 73

Wisner later recalled the tension of Cairo when he arrived. The city felt nervous in a way he'd not seen before. He landed in the early morning and went almost immediately to see the President. The situation would be brought back to normal, Mubarak assured Wisner. Soon. He'd fired most of his cabinet a few days earlier. He had promised reform, and had begun studying what might be done first, and how soon it might be carefully attempted. He hinted to Wisner that the rumored transition of power to his son Gamal was not, after all, inevitable. But, Mubarak said, he wasn't going anywhere just now.

Wisner tried another tack: He asked if the President would like to leave the country. Maybe a trip for medical treatment? Mubarak dismissed the idea. He'd seen worse, he reminded Wisner. Mubarak had been sitting inches away from Sadat on that fateful October day in 1981. He himself had survived six assassination attempts. In fact, he said he intended to go on television again that very evening. He would speak directly to the protestors. He would tell them and the Egyptian people of his plans for reform and for a gradual transition of power. He would remind them of the greatness of their national spirit. He would evoke the immensity of their ancient history. And he would be sure they understood that he would stay, he would die on Egyptian soil. *You can tell that to the White House too,* Mubarak told Wisner. He vouchsafed, at the end of their talk, at least some of the assurances the envoy had come to collect: No violence. A graceful departure at some point. Elections, even. But all on his timetable.

Around Mubarak in those days, Wisner recalled, he saw bafflement. Resolution admixed with surprise. These men in that Egyptian power structure, all wealthy and comfortable and perfectly secure, had thought their places impregnable. They were, after all, the thin human line between the modern world and the boiling mad Islamic fundamentalists who hungered to rule the country. They'd arrested the usual dissidents, closed down the normal channels, checked with their informants. Nothing. The old, reliable vents for unrest hadn't worked. The pressures grew. It was perhaps easy to understand why they thought they'd survive. They'd never failed. Mubarak had been president for *30 years.* For now, at least, the syllogistic logic fluttering through the President's own arguments reassured them: Egypt wants stability. Only I can deliver stability. Therefore, Egypt wants me.

Wisner left the Presidential Palace. He reported what he'd learned back to Washington and, work done, headed to the airport. That evening he found himself waiting for his flight in front of a TV in the crapped-out lobby of an old hotel on the road out of town, watching Mubarak's promised speech. The President projected total confidence on screen. This was the Mubarak Wisner had known in the 1980s. There had always been a barreling self-assurance about the man; it was alive in him now, facing the unthinkable. Ruggedly handsome and perfectly controlled. You could almost believe, as Wisner did for a moment, "This was a great man who had led a country through difficult times. He will endure." *Six assassination attempts.* Mubarak had always been a survivor.

Yet as he watched, Wisner knew the challenge the great man faced. Did Mubarak, he wondered? Did he even understand what was happening around him? That he was giving the speech on television, in the face of this strange revolutionary movement that was unfolding on the smart phones of Cairo as much as on its streets, was a subtle admission: Old power struggles to handle new rules. Wisner had seen tapes of the earlier speeches, the ones intended to calm the crowds which had in fact inflamed them further. He knew just how fine the edge Mubarak now paced. Mubarak needed to address the protestors on their own level. He needed to show he understood. There was only one thing he must not do, Wisner thought as he watched. He must not address the protesters paternalistically, as a father might speak to a child. On the screen in front of him, Mubarak continued in his steady, slightly strident voice. "I am speaking to you all from the heart," he said. "A speech from a father to his sons and daughters."

Two weeks later, Mubarak was gone.

2.

Imagine, for a moment, you are Mubarak – or really any successful early 21st century autocrat. You've managed several decades of control in your Middle Eastern, North African or Asian country. Perhaps you've inherited your position from your father or an uncle. They've taught you about power. Keep it tightly controlled. Replace key officials regularly. Execute your enemies from time to time. You've learned the virtues of the hard crackdown. You've sent your security officers to the best military schools in the US and Europe, and taught them to temper their firm grip with (a bit of) humanity. In short, you've mastered the use of a strong hand and the establishment of a certain national logic that suggested your name – Qadafi or Mubarak or el-Abidine ben Ali – as a synonym for stability, for prosperity and even pride. This seems to you like the most stable possible order. You know that someday it might have to change, but that day seems a long way off. You delay reform. You prepare your son to take over. Meanwhile, your citizens begin to acquire the Internet and cell phones. And one day in 2008, following a financial crisis far away from your own shores, you begin to notice an unnerving trend.

On the streets of Iceland and then Spain and then Chile and then Israel and Ukraine and Turkey and Mexico and then New York City, thousands or hundreds of thousands of citizens gather. There is no one leader of any of these protests. Instead these movements breathe and grow like an organic whole. The discontent is diffuse even if the result is similar: Mass gatherings, control of some essential public space – a square, a stock exchange, a park. All organized, it appears, using completely ethereal techniques: Text messages, video postings, chat rooms. Similar movements appear around in the world. In Iran, in Italy, in Russia. "Occupy Wall Street", blossoms in New York City, a protest against wealth inequality and finance. It becomes a self-franchising social movement, appearing in hundreds of cities: Occupy Hollywood. Occupy Central in Hong Kong. Occupy – strangely – Vegas.

Then in Sidi Bouzid, a Tunisian town you've never heard of, far away from all these unstable looking mobs, a spark lands. A local man has set himself on fire. Police (worse, a police *woman*) had confiscated his scales and his fruit and then tossed him around for no reason other than that he was poor and could do nothing about it. It is November 2010. Within hours protests begin in Sidi Bouzid. They spread to Tunis. [81]Then Tripoli. Then Damascus. You watch as the anger, moving on once-invisible technological lines of video and text, demolishes the stability of all of North Africa. Over the next two years leaders are pushed from power in Egypt, Tunisia, Libya, and Yemen: their names, instead of being symbols of stability, instantly cast as sources of injustice. Other countries – Syria, Algeria, Sudan, and Bahrain tumble for periods into the black hole of civil violence. Some people mistake all this for a democratic revolution. Over time, however, it's clear this is hardly that. Something more complex is emerging from the violent mist. New, nearly virtual terror groups organized themselves in the vacuum, hyper-lethal versions of connected protest. A new kind of political energy, a method of linking people and ideas and an easy destructive power, is alive. It seems to be as active in cynical, murderous fundamentalists as in the optimistic peace-hoping youth. Democratic revolution? No. Revolution? Yes, clearly, that.

A few years later, after you've been replaced or are on the run, after your own country has had upheaval and you've had your visit from a well-meaning American diplomat urging you towards a quiet retirement house in Saudi Arabi, the Spanish social philosopher Manuel Castells will name the disease that undid you. Castells is perhaps an unlikely figure to diagnose the political illness that infected so much of the world after 2008. An elfin, kinetic figure with a disorganized mop of grey hair, he sports the wardrobe of an accountant and a rolling Spanish accent that flavors his speech with a surprising taste of romance. It's a mixture that seems somehow ideal for a world often on his lips: "Reevolootion." With the meticulous care an anthropologist might bring to documenting a distant, undiscovered tribe, Castells has spent decades finger-poking, classifying and explaining networks. In the late 1990s his books, lectures and research set the frame for the world we inhabit: fast-changing, ripped through by communications and technology, linked in unusual ways. "The network society," he explained, "represents a qualitative change in the human experience," he explained. [82]

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[81] **They spread to Tunis:** Mohamed Zayani, *Networked Publics and Digital Contention: The Politcs of Everyday Life in Tunisia*, Oxford University Press (2015)
[82] **"The network society":** Manuel Castells, *The Rise of the Network Society* (Malden, Mass: Blackwell Publishers, 1996), 508

Inevitably, Castells became curious about how such a change was affecting politics. Speaking to an audience at Harvard in the spring of 2014, he reviewed what he had learned in the past decade – and particularly in the years since 2008, much of which he had spent dropping into the ground-zero sites where network protest and dissatisfaction were exploding. "We are witnessing," he told the audience, "the birth of a new form of social movement."[83] Information technology was breeding massive, rapidly moving social waves. These movements went from invisible to irresistible in instants. They pressed for political change or for economic justice or even for – and this was odd for such wired up efforts, but anyhow – a return to a pre-technological age. In most of these countries, the older organizations had little appeal to a new generation of protesters. The political parties smelled of rot. The media was state-owned or controlled by billionaires. For a generation used to instant empowerment, the time to work inside these broken structures seemed impossibly long. And, anyhow, another option existed. Twitter or Facebook or YouTube had taught them. So riots in those dozens of cities, unplanned and uncontrolled, emerged.[84] The "Collective Action," of popular movements for hundreds of years from Bastille-raiders to labor actions, was replaced – upgraded? – into "Connective Action." People who'd never met and who shared very different histories and desires, were connected, fused together by lightspeed bits in hope or fury or vengeful rage.[85] This was, perhaps, predictable. It mirrored the linked, fast-spreading dynamism of the 2008 crisis itself. As the British central banker and economist Andy Haldane observed, the world had never before suffered a genuinely *global* financial crisis, with every county on the planet, tied together as they were by finance and technology (and fear), tumbling off a cliff at the same, nano-second instant. [86] In one three month period, the entire global economy shrunk by five percent.

As fast as shocks like that economic one spread, these linked network social reactions seemed to move faster still, echoing each other, with ever louder and more complex results. The technology itself became as important to the emergence of new groups as their ideas. The terror phenomenon of ISIS, for instance, emerged almost entirely along skeins of digital connection, and was itself a reaction to the network-led disruption of the Arab Spring – and the earlier fracturing of older order in Iraq. When President Obama dismissively called ISIS the junior-varsity squad of terror and said there was nothing much for the West to worry about, he was reflecting the same dim, comfortably dangerous instincts that undid Mubarak. *These kids can't possibly amount to much*. The youth of these groups, the very fact that they were *not* the varsity team, their intimate fingertip familiarity with virtual spaces – all this gave this new generation of movements energy, appeal, attraction. Even in countries that looked technologically "backwards" by American standards, linked systems speed-bred revolution, they gleefully filled in for a failed traditional media, and they accelerated and enabled the creation of groups as different as the Syrian Electronic Army and Occupy Hong Kong.[87]

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[83] **"We are witnessing":** Manuel Castells "The Space of Autonomy: Cyberspace and Urban Space in Networked Social Movements", Speech at Harvard GSD, February 2014, available online

[84] **And, anyhow**: Raquel Alvarez, David Garcia, Yamir Moreno, and Frank Schweitzer. "Sentiment Cascades in the 15M Movement." *EPJ Data Sci. EPJ Data Science*, 4:6 2015

[85] **People who'd never met:** W. Lance Bennett & Alexandra Segerberg "The Logic of Connective Action", *Information, Communication & Society*, 15:5 (2012)

[86] **As the British central banker**: Andrew Haldane "On Microscopes and Telescopes", *Speech at Lorenz Center Workshop on Socio-Economic Complexity*, March 2015, p.20

Traditionally, such a long list of hopeless exclusions (no money, no friends, no access, no power) added up to an easy judgment of irrelevance. But ISIS was like the the Iranian bloggers and American social justice campaigners and Swedish digital pirates and vengeful Houthi fighters who were all staring back, confidently, at the people who had the money, the friends and the power – and the drones. Obama and Mubarak and – fill in the blank with a powerful name or institution – were too slow. Out of touch. Their connections were all wrong. So while the individual parts of the new networks – young students, poorly trained armed fighters – were soft and human and easy to destroy, they still tore unstoppably at old power. Tied together, the connected systems themselves were capable of more than their individual strength might suggest. What they shared wasn't simply a single issue or identity. It was cheap, constant connection. And they were, frankly, furious.

The old guys were crafty, of course. They tried to shut down the technology itself. Or they aimed at crucial points on the network. "Arrest or kill the leaders you can find!" was the sort of order that bolted stability back onto Iran, for example. Other governments found they could crack the will of the protesters by going after their relatives. "Relational repression," as it became known, was the closest a big power could get, quickly, to using one network to fight another. And there were other strategies: The Egyptian military, for instance, played a deadly serious long game. They gave in on a few points. They let the massed opposition and Islamic networks come to power. But this was merely a pretext, a way to map the ties of these groups, to coldly study how they functioned and record the secret sources of their power and influence and money. Then, when the Egyptian population tired of these failing, amateurish new leaders – as the military knew they someday would – the generals moved.

Skeptics would demand of Castells: What the hell did any of these protests really accomplish? What sort of *reevolootion* was it that left nothing but chaotic sink holes in Tripoli and Damascus? What they accomplished, Castells conceded, was mostly destructive. But that was the point. This smashing at old laws, the cracking apart of ideas of power and control had changed the landscape. And it had revealed a hidden logic of connection. Irrelevant? That was like saying earthquakes or epidemics should be overlooked. In their vibrating apart of once-solid structures, networked social movements told a great deal. They revelaled interconnected fault lines. They showed how groups could suck power into themselves from networks, along invisible lines, and animate themselves as if by connection to electricity. The protesters and terrorists understood power that existed simply because of connectivity. They understood how easy it was to connect. And so they had an instinct that eluded the comfortable men in the palaces. The usual reaction of authorities – *Round up the usual suspects* – didn't work because, as Castells noted, "The usual suspects were networks." You couldn't arrest a network.

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[87] **Even in countries:** Edwin Grohe "The Cyber Dimensions of the Syrian Civil War: Implications for Future Conflict," *Comparative Strategy*, (2015) 34:2, 133-148

3.

Before we can go much further in figuring out how network power might be used – to close up those six worrisome paradoxes, to create massive new companies (or invest in them), to rebuild our politics – I think we need a picture of sorts in our heads of this new landscape. What does a network look like? How does it's design affect its operation? Yes, it's true you can't arrest a network. But can you say something about how it's different? Can you spot the parts that are dangerous? When someone like Castells says to us, "Power is moving," what does that mean exactly? Where is it going? What I want to do now is begin to assemble an image of a network, and to show what that sort of linked design tells us about where we are now and where we're going. Then, with such a picture, firmly in our minds, we can ask just what these networks are for, after all, and how they might be used.

It is an old chestnut of historians and anthropologists that power – the ability to make or cause things to happen – is often determined by structure. When I say, "Superpower" I am painting a picture of the international system with a single word. "Highway," does the same – and tells you something about logistics, trucks, economic power. Or "City." This is why "org charts" have such a decisive power. Think of the map of power in your family or your office or a nation. Who makes the decisions? Why? The way we bottle up our lives in firms or congresses or universities flavors just about every other decision we make[88]. An imperial CEO, prone to visions and control creates a different sort of firm than a boss who moves among his employees nearly as an equal. An army that moves from the top down is different than one that lives, as Mao said of the Chinese guerilla forces that mastered the country against steep odds in 1949, "as if they were fish and the people were water." Power is always packed into structures of some sort. Emperors, kings, presidents and congresses all reflect certain arrangements. But those arrangements change; power moves. You can see leaders struggle with this constant shifting: Think of the "Englightened Despotism" of the 18th Century as Frederick II of Prussia, Joseph II of the Hapsburgs and Catherine II in St. Petersburg each struggled to marry the then-new ideas of liberty with older instincts of control. History is, in one sense, nothing but the tale of the movement of power. Once the idea of an Assyrian king emperor was new, as was the notion of a President or a Pope. History is paced by the arrival of new species of all sorts; and by the death of others. This is as true for institutions as is it for bugs. With this caveat: No one gives up power easily.

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[88] **The way we**: See Venkatesh Rao, "The Amazing, Shrinking Org Chart", on Ribbonfarm.com, May 28, 2015

Here's what's unnerving about this for us now: There are whole approaches to power that look extremely reasonable until one day they look insane. For thousands of years the idea that one feudal lord should control thousands of serfs seemed perfectly reasonable to the lords and serfs alike. John Maynard Keynes' famous line about Egypt – *Just because you built the pyramids doesn't mean you get to use them* – marked a whole approach that seemed inarguable for centuries, even if the experience of it was inarguably awful[89]. Features of the world – moats, massive cathedrals, pyramids, sweatshops – exist only because distributions of power permitted or enabled or encouraged them. The quotidian interactions of our lives – how we shop, where we hang out with friends, the kinds of performance or politics we follow – these all produce long-lasting structures. Malls, democracies, war zones.[90] Pushing power into networks, we can see already, creates whole new arrangements. Some are as unimaginable to us now as a voting booth would have been to an Egyptian slave. When we say that ours is a revolutionary age, it's not because you can watch videos on your phone. It's because of *why* you can watch video on your phone – and what that implies for the old, nervous structures around us.

4.

Before the age of the Enlightenment and Industrial Revolution began most political and economic power was extremely *concentrated*. A few kings and feudal lords controlled most economic production. Priests decided who could speak to God, and how and when. Finance was dominated by a few families, largely working in the secretive counting rooms of early banking capitals such as Amsterdam or Genoa or Lyon. Knowledge about the world, a sense of science and of history and even geography, was closely held, fiercely opaque. Inside monastery walls or university halls the aim of protecting (and editing) what the world knew far outstripped any hunger for new ideas, for innovation or dissemination. In those times a lucky or brutal few decided the economic, political and intellectual lives of many. You can picture power as balled up almost, in the hands of a tiny and fortunate elite.

Over time, cracks appeared in this system. One of the earliest was also one of the most fundamental: The schism that split the Catholic Church. This was, at first, the work of a young German theologian named Martin Luther in the 16th Century. Luther was a man whose view of life, he would say often in later years, was shaped by a single sentence: Romans 1:17. "The righteousness of God is revealed from faith to faith, as it is written: The just shall live by faith." *The Epistle to the Romans*, as Romans is formally titled, was a letter from Saint Paul to a collection of recalcitrant, spiritually mordant Jews in Rome. His message was among the simplest and most compact and personal possible: The transmission of faith requires nothing more and nothing less than faith itself. Romans teaches us that believing in God, which is *faith*, is enough for access to all the riches of heaven: God's righteousness, an afterlife, forgiveness.

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[89] **John Maynard Keynes' famous line:** Keynes, *The Economic Consequences of the Peace,* p. 16

[90] David Murakami Wood and Stephen Graham "Permeable Boundaries in the Software-Sorted Society: Survelliance and the Differentiations of Mobillity" in *Mobile Technologies of the City* eds. Mimi Sheller and John Urry. (London: Routledge. 2006) Chapter 10

By Luther's age, however, access to those riches was not so simple. Among other things, spiritual control had become a source of lucre for the church. The glory of the Catholic Church, her magnificent cathedrals and clothes, and her insidious habits of selling passes to heaven in the form of indulgences – this was a deployment of faith and power marked by a venality that grated against Luther's from-faith-to-faith sensibility. When he saw his own congregation increasingly slipping away to churches with priests who would do what he would not, which was to market and sell indulgences, he saw a rank, strange hypocrisy: The Church as an economic instrument. His rage boiled over in the summer of 1517, and he summarized his case against the Church in the 95 Theses that he nailed to the door of his local church on October 31st. *Papa non vult nec potest ullas penas remittere preter eas, quas arbitrio vel suo vel canonum imposuit*, he wrote in Thesis Five: No matter what you might pay him, the Pope can't influence what happens to you after you die. Or, Thesis 78, *Euangelici rhetia sunt, quibus olim piscabantur viros divitiarum*. Indulgences are nets with which one fishes for the riches of men.

As much as Luther was crying for a restoration of Saint Paul's sense of a personal faith, he was also starting a difficult and – for the Church – unpleasant argument about power. Our relation to God, Luther meant, is *our* relation. It's not something to be brokered or sold or negotiated. It does not require fancy clothes or cathedrals or hierarchies. For Luther, this new logic had engendered a profound spiritual crisis. He recalled, later in life, the very first time he'd encountered the possibility of direct access to God, in the pages of Saint Augustine, probably around 1508. "When I came to the words 'thee, most merciful father,'" he wrote, "the thought that I had to speak to God without a mediator almost made me flee."[91] Who was he, Martin Luther, to speak directly to God? But from then on, Luther's experience of God, his own sense of power honestly passing from faith to faith – and not from faith to church to faith – embodied an extremely heretical idea about power: faith without a middleman.

Such a concept undid much of what had been taken as inarguable doctrine. The Church immediately understood the danger. They rushed to label Luther as heretical and, later, crazy. In arguing that the Catholic Church, with all of its magnificent trappings of faith, was really a useless toll gate, Luther was picking at a still larger, more significant question: How should power be split? If Luther was right, and God should be accessible directly to each of us, then some other questions tumbled after that one. Should we have direct access to political power? To ideas? To money and land and control of our own economic destiny? Could "from faith to faith," be recast as "from idea to idea" or "truth to truth" or – and this turned out to be the really violent shift – "from citizen to citizen as equals"? The Church was merely one of many institutions that had sat massively, reliably, comfortably (and greedily) between people and power.

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[91] **"When I came to the words":** Preserved Smith, *The Life and Letters of Martin Luther*, (Boston: Houghton Mifflin, 1911) Introduction

Luther, it later emerged, was not alone. An era of awkward answers had begun. The Prussian astronomer Nicolaus Copernicus, for instance, had preceded Luther by a couple of decades with his own questioning of the unquestionable. "Those who know that the consensus of many centuries has sanctioned the idea that the earth remains at rest while the heavens move around it would regard it as an insane pronouncement if I said the opposite," he wrote. Machiavelli, Galileo, Erasmus, a growing list of great, transformative names – they were all working away in this same questioning spirit. Their insane pronouncements, when proven true, opened the way to still further insights. The Enlightenment had begun. The old power centers acted almost as if nothing had changed; maybe they believed nothing would ever need to. "What was, still is," the Catholic Church pronounced confidently (and absurdly) at the Council of Trent in response to Luther's Reformation. But there was no turning back. As the German philosopher Immanuel Kant wrote, the motto of the era could best be summarized as: *Dare to know!* "The Enlightenment," he explained, "requires nothing but freedom."[92]

This, it emerged, was a hell of an expensive requirement.

4.

In the years after Luther's 95 Theses, Europe was torn apart. The continent's longstanding image of power – balled up, concentrated, unquestioned – was ripped away. Another picture emerged. The idea of personal access to God, a kind of "one man, one prayer" approach to religion, which opened in turn other fundamental struggles. The credibility of nearly every sacred body that had once depended on controlling people and limiting their choices – the Church, those kings, feudalism, myths – faced a creeping erosion. "Human knowledge and human power come to the same thing," the English philosopher and statesman Francis Bacon observed in the midst of this shift in his artillery shell of a book *The New Organum.* Human knowledge, he means, *is* human power. You can imagine the energy, the promise of the book as it was passed in Latin copy to Kepler in his study in Linz (then Lintz), to Gallileo in Venice a decade before his imprisonment. It was this same human power to question even the most sacred ideas that the masses of Enlightenment Europe would use, gleefully at times, to claw apart most of the old structures.[93] Luther's heresy led initially to the Wars of the Reformation, battles that pulled every European royal family into a struggle between church and state, and then between each other. The bloodletting of The Thirty Years War, the first truly pan-European conflict, established in its aftermath a new balance that let each King select the religion of his subjects. *Cuius regio, eius religio* as the agreements of Westphalia decided in 1648 – or *Whose realm, whose religion.* This produced some stability, but not for long. You could read that line, after all, very personally and see what it demanded next: *My* realm, *my* religion.

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[92] **"The Enlightenment":** Immanuel Kant, "An Answer to the Question: What is Enlightenment?" *Kant: Political Writings,* (Cambridge: Cambridge University Press, 1991) p. 54

[93] **"Human knowledge":** Francis Bacon, *The New Organon. Cambridge Texts in the History of Philosophy.* (Cambridge: Cambridge University Press, 2000) 32

In a sense, this revolutionary tumult was necessary to pull power from a comfortable, established *asymmetric* arrangement, in which a few people controlled so much, and into something more *symmetric*. Luther's Reformation thinking made God directly, instantly accessible to anyone. (Just as Copernicus' scientific way of thinking gave us, eventually, the ability to question if God existed at all.) Individuals – and the very birth of the idea of *individualism* was another heretical slap at the old institutions – could balance and contend and argue as equals. The notion that men were "created equal" became increasingly evident in this generation, even as establishing that equality triggered the French Revolution, the American Civil War and countless similar conflicts. Democratic systems aspired to enshrine this new balance, shifting countries from rule-by-birth to rule-by-majorities. In economics, markets reflected the new picture of power too. *How good is that product? What is the price? Is there demand?* became the essential questions, not *Which Lord controls that field.* Releasing power into the busy arms of businessmen, politicians, scientists and artists meant ideas, politics and innovations contended one against the other. They got better. They evolved. And the sum of all these interacting pieces made sustained economic growth into a reality for the first time in history. In a "commercial society," Adam Smith explained in *The Wealth of Nations*, "Every man lives by exchanging, or becomes in some measure a merchant."[94] Smith didn't mean everyone was really a merchant, rather that in a world of markets each of us – our labor, our ideas, our capital – is a commodity. We are liberated, but only to compete. For votes, for jobs, for resources.

If the old faiths and institutions couldn't stand the pressures of these powerful, equalizing forces, then new ones had to be built. "The scaffolds humans erect," the Nobel prize-winning economist Douglass North called these foundations.[95] The idea of equality of influence or power – not merely opportunity – demanded new containers: voting booths, congresses, unions. Rule of law was one of the most urgently essential: a single code that could be laid down evenly across a society, demanding that principles of order outweighed the habitual advantages of prominence or power or birth. Law aspired to make men equal in front of courts. This, in turn, suggested a new degree of fairness up and down the social order. Broader literacy, the standardization of measurements or the birth of universal credit and currencies were all tools for spreading access. Museums, scientific congresses and industrial fairs helped turn sparks of theoretical knowledge into the practical heat of industry.[96] Ever-more efficient use of iron, of steam, of electricity all reflected a virtuous loop of theory and practice, between the lab and the market, the scientist and the businessman.

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[94] **In a commercial society**: Adam Smith, *The Wealth of Nations*, (Oxford: Oxford University Press, 2008) 32

[95] **"The scaffolds humans erect"**: Douglass C. North, *Understanding the Process of Economic Change*, (Princeton, N.J.: Princeton University Press, 2010) 48

This fusion of the instinct for competition, for constant new innovation, delivered the modern world you and I live in today. "All fixed, fast-frozen relations," Karl Marx and Friedrich Engels wrote in 1849 about the speed of this change, "are swept away. All new-formed ones become antiquated before they can ossify. All that is solid, melts into air."[97] As more people "dared to know", the big ideas and big thinkers attracted an audience. Arguments started. New ways to record and share the answers appeared too. Locke or Newton or Darwin were as notable for the crowd of debating, curious citizens they attracted as for their ideas. Such contentious discussions were designed to elicit truth, to give individuals that same shocking sense Luther had felt on discovering a powerful idea by himself; but as important was that these debates were recorded – written and then distributed in journals, books and letters. For most of history, after all, knowledge suffered from its own fragility and asymmetry: There was always a chance, maybe even a likelihood, that some important insight would be lost in a plague, strangled as heretical, burnt up in a library fire, or dissolved by some military misfortune. This is why, for instance, we have almost all of Shakespeare and why we are missing so much of Sappho. Widespread knowledge changed this. A solid, inarguable base endured. "If I have seen further," Newton famously wrote, "it is because I have stood on the shoulders of giants." Those shoulders for Netwon were enshrined in libraries, scientific journals and the massive sense of what had come before swaddled in the Cambridge walls that surrounded him. In this sense, the preservation and advance of knowledge, the new symmetry, was not only the largest shift of power in history. It was also the best thing that ever happened to the human race.

In other ways, of course, it was very nearly the worst. Symmetry had a darker edge. It meant that nations decided the strategic questions of the day by throwing massive, deadly power at one another in unprecedented volume. With each passing year, Europe's engines of science and industry were grinding out tools of unprecedented destruction. Napoleon's greatest victories were enabled as much by the industrial strength of French artillery factories as by the liberated masses of the French revolution. When France was unseated by the British Empire, it was manufacturing scale and naval depth that tipped the balance. London's clubby mastery was, in turn, challenged by Germany's efficient, iron-and-blood commercial engines. Size and scale and safety became linked. This sense of the undeniable power of industrial mass was Winston Churchill's only comfort for two nervous, lonely years after 1939 as he paced the hours until what he hoped was America's entry into The Second World War. "I knew that the United States was in the war, up to the neck and in to the death," he wrote the day after Pearl Harbor. "Hitler's fate was sealed. Mussolini's fate was sealed. As for the Japanese, they would be ground to a powder. All the rest was merely the proper application of overwhelming force."[98] Or, the reverse of that coin: Admiral Yamamoto grimly to Emperor Hirohito: "If you tell me that it is necessary that we fight, then in the first six months to a year of war against the U.S. and England I will run wild, and I will show you an uninterrupted succession of victories. I must tell you also that, should the war be prolonged for two or three years, I have no confidence in our ultimate victory." [99] *Ground to a powder.* This was symmetry at its most pounding and decisive. Mass against mass. This was a picture of power that seemed undeniable in its pure logic. Until now.

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[96] **Museums, scientific congresses:** Joel Mokyr, "The Intellectual Origins of Modern Economic Growth", *The Journal of Economic History*, Vol. 65, No. 2 (June 2005) p 290

[97] **"All fixed, fast-frozen relations"** Karl Marx and Freiderich Engels, "The Communist Manifesto," in *The Economic and Philosophic Manuscripts of 1844 and the Communist Manifesto* (Amherst, N.Y.: Prometheus Books, 1988) 212

5.

So how should we think about power in our own age? What picture best captures its vibrant, unceasing demands?

It might be tempting now, as a first pass, to say we've left that world of purely symmetric, mass-against-mass power behind. After all, a few figures, anywhere in the system, can exert massive and even fatal, collapsing pressure. One clever hacker, one terrorist, one hedge fund manager with a bad idea, even one purely accidental mis-connection – never before has so much power accumulated in systems so vulnerable to single slips. And our massive power – the US Army or our economy – is hardly decisive despite its weight. It seems now that something can grow bigger *and* weaker. A nation may have an ever-larger GDP, but if it is miswired somehow, if its social or legal or youthful connections misfire a bit, then it may be still more vulnerable. But this "power of a pinprick" asymmetry is not the whole story. Just when the network looks like a way to tie together all sorts of small, even isolated forces and bless them with decisive power, we notice something else. Tremendous, even historic and undeniably massive concentrations of power. Platforms like Facebook, software systems like Microsoft or search centers like Google are sort of dense, impossible-to-replace gold mines. Google answers questions for more than 50% of the world every day. Is it the most powerful company in human history? Is Facebook? And is their power widely distributed? Or is it concentrated in the algorithms and cloud data of these firms? Anyhow, they are among the first of a totally new species of firm.

The leap we have to make in understanding our networked age – and by this I don't just mean the Internet, but really any connected system you'd care to consider – begins with this idea: On connected systems, power is defined by both profound *concentration* and by massive *distribution*. It can't be understood in simple either/or terms. Power and influence may yet become even more concentrated than it was in feudal times *and* more distributed than it was in the most vibrant democracies. Network power, we might say, exists as a sort of skin or surface that ties together billions of points to each other and to vital, centralized cores. We know our world is filling with more and better and faster connected devices distributing themselves at an unmeasureably quick pace; but we are also breeding powerful centralized knowledge and computing basins. Biological research labs now engage in complex DNA analysis with powerful desktop tools (distribution), but to work efficiently, they demand fast reference to the patterns revealed only in immense genetic datasets (concentration). You can snap high quality videos with your phone (distribution); you share them with millions on a connected central stage like Facebook or YouTube (concentration). A financial engineer can architect a new and profitable trading instrument on his tablet (distribution), but his hopes for profit depend on instant connection to busy, price-setting markets were prices are set (concentration.)

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[98] **"Hitler's fate was sealed":** Winston Churchill, *The Second World War: The Grand Alliance*, (Boston: Houghton Mifflin, 1986) 540

[99] **Or the reverse of that coin:** Roberta Wohlstetter, *Pearl Harbor: Warning and Decision* (Stanford, CA: Stanford University Press, 1962), 349–353.

This sort of pulling, taffy-like web of ties between small (your watch) and big (connected data systems) stretches constantly. It's what you need to picture when you think of an image of network power. The wired masses in Tahrir square, for instance, emerge like magic on some once-invisible surface that forms between their phones and powerful platforms like YouTube. Or: Hyper-linked terrorist groups appear from nearly nowhere, jerking recruits from suburban London bedrooms via massively connected messaging platforms. Recall Adam Smith's line about the Enlightenment, how a commercial society was one in which every man had to become a merchant? Well, in our age of connection, every one of us is a node. We sit on that tense, stretched surface between center and periphery. When we say "connection changes the nature of an object," this is the exact balance we have to comtemplate. "Social structures," John Padgett and Walter Powell wrote in their masterful study of complex connected systems, *The Emergence of Organizations and Markets*, "should be viewed more as vortexes in the flow of social life than as buildings of stone."[100] This idea has some eerie implications: Every structure – congresses, universities, the company where you work, our minds even – is merely a temporary collection of relations. And of course those relations can change at any moment. The tension between concentration and distribution acts, in a sense, like an hydraulic jaw. It pries power out of older, once-legitimate hands.

Consider the case of my father, a cardiologist. As a doctor he stands at the head of a medical tradition run for thousands of years on the idea that the doctor is the center of your care. If you show up at a hospital on a stretcher with a flat-line on some heart monitor, my father's decades of training and practice have always been your best hope. But today, nearly every patient he sees – even the ones he brings back from their black flat-line future – second-guesses him as soon as he's out the door: Googling their disease, tapping into websites of mixed reliability, joining some online community of people with the same sickness while they still have tubes in their nose. Meanwhile, his ideas about your case are under quickening pressure: An emerging "Internet of DNA", massive collections of treatment histories, or linked databases of medical histories will be overseen by machine intelligences able to out-diagnose him.[101] Constant, automatic links between body-borne sensors we'll wear (or swallow) and data centers will sharpen the edge these systems have on my dad further still in coming years. They will notice things he could never hope to see – small but portentous changes in your heartbeat, chemical chimeras from new medications, how you're feeling in each moment until your last.

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[100] Padgett and Powell, p. 8

It is the nature of networks that they create both massive concentration *and* distribution. And in the process they simply rip apart many of our existing structures. Look at our worrisome global economics at the moment. Extreme concentration of wealth on one end and massive distribution of work tools to ever-cheaper sources of labor runs on this exact same logic: it is a sort of jawing network effect that is tearing up the middle class, producing an ever-richer elite. Those who have information in financial markets, for instance, possess a secret and vital and ever sharper edge over those who don't. Which makes them richer still. Which sharpens their cutting edge still finer. If we ask ourselves why the world now feels on the edge of a deflationary shock – a moment where there is more supply than there is demand, where the world waits to buy because "tomorrow it will be cheaper" and sends economies spiraling as a result – one reason is this way in which networks are pulling on our economics. On the one hand, wealth is concentrated in fewer and fewer hands by the leverage of knowledge and a head start and connection – a phenomenon known, in fact, as a "rich club" distribution by network theorists. The middle class is locked out of this group. Their wealth and power and influence declines, as a result. This slashes overall demand, since a billionaire consumes less of each additional dollar than, say, a school teacher. At the same time, massive distribution of technology and connection is reducing demand for labor while flooding the world with commodities, workers, newly linked-supply of items like bedrooms and car seats.

The network effect works its usual jawing destruction here: Connection decreases demand *and* increases supply. It concentrates capital in a few hands, even as it distributes tools of work to cheaper and more distributed people and machines. The middle is class torn inexorably apart from both ends. It's not wrong to wonder, as some economists have, if capitalism is a system best yoked to older, slower puritanical values that encouraged saving, not consumption – and to ask if wiring markets to instant networks is not, in the end like trying to warp speed a carriage. Anyhow placing an economy on a network surface produces new, ripping pressures as apparent in middle-income nations as they are in middle class households. "We are being destroyed," a South Korean friend said to me about the hollowing out of his national economy. Korean computer and television and compute manufacturers had hoped they could develop their own essential software, that their hardware manufacturing technology would be unmatchable. In fact, software triumph was drifting to cores in Silicon Valley and Redmond – a contest between Microsoft and Apple and Google. And the prized Korean manufacturing excellence was no match for cheap Chinese and then Vietnamese labor welded to assembly-line technology.

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[101] **Meanwhile, his ideas about your case**: I. Akyildiz, Pierobon, M. Balasubramaniam, S. Koucheryavy, Y., "The internet of Bio-Nano things," *Communications Magazine, IEEE* , vol.53, no.3, pp.32-40, March 2015

We see this pattern of network-led shredding nearly everywhere now, the result of powerful cores of knowledge and wide distribution of connection. Newspapers – removed from relevancy by crowd-sourced newsfeeds *and* constantly-connected smart databases. Once indomintable television networks, devoured by cheap home-made videos *and* large-scale platforms that use the Internet for distribution. Bitcoin and other first-generation block-chained currencies eating at the once unquestionable authority of central banks. Drones hovering along on a skein of GPS and data links are also among the new citizens of this connected skein. They are products of a data web: They depend on centralized connection *and* the distribution of technology, data, and design. They may do to old ideas of security and power what the fusion of GPS and smart phones and databases have done to hotel chains or medicine. Massed, self-organized drone fleets can turn aircraft carriers and exposed battle groups from sources of strength into vulnerable and even dangerously self-defeating antiques. They will remake urban landscapes. Think of the way that Baron Hausman redesigned Paris in the 18th Century to manage with the Enlightement-age danger of liberated, angry citizens. The creation of the city's wide boulevards, central axes for easy movement of the police, and intersections engineered to quarantine riots was a reaction against the demands of mass liberty. Our cities are now vulnerable not simply to mass protest risk, but to the pinch of asymmetric levitating drones. The sensations of safety behind walls, up a staircase, inside a windowed room all begin to slip away. Drone risk – and all the potentially wonderful elements of constant, instant drone assistance – will command a retooling of cities, much as automobiles did a century ago.

So this is power: Cores and distribution. They way that tension pulls particularly on certain, once-essential structures and objects and people explains a lot about our age – including the failure of so many institutions. Connectivity changes the nature of an object. That's true for your doctor, your bank account, your army – and for billions of people whose lives alter irreversibly once they connect to markets, to knowledge, to the world. To connect now is to be exposed to this fresh young skin of linked power, a lively surface that transports anything at near instant speed. We have to ask just how many of the "scaffolds humans erect" that were essential for Enlightenment-era advances will be pulled down. And of course we face the exciting, uneasy task of thinking up the new scaffolds we now must build.

If you have the tools or the skill to see the world this way, as a vibrating and pulling mesh of connections, then you can look at a tanks or soldiers or years of stability and see *possibility.* A friend who controls the largest secure Bitcoin vault in the world, put it to me once this way: "Platforms mattered once; now it is protocols." His point was that the pipes and rules connecting the varied systems of our world affect, fundamentally, the distribution of power. The rules of the Bitcoin blockchain or the implications of a protocol like IPv6 or DNSSSEC reveals something about how we'll all connect in the future. Once these new rules become visible to you, then even the most inarguable current sources of influence and control – the US Dollar, say – look weak. The Seventh Sense is defined first by an intuitive feeling for just how power is being re-geared now. If you look at a kid with a phone and think "Strong", you have the Seventh Sense. If you look at an angry, barely educated terrorist wannabe and think, "Junior Varsity", you don't. And as a result you may be about to have a very unpleasant surprise.

Try this: Ball up your right hand and hold it in front of you; now take your left hand and open the fingers and hold it a few inches away with your fingers pointing back towards the right. You can think of your left hand as the vibrating, living network of connection – reaching towards the concentrated power that your right hand represents. This is the heart of understanding our age. Networks live in that tension between distribution and concentration. To connect any object – my dad, a newspaper, a radio-controlled plastic drone – to this skein is to change, irrevocably, its essence. The reason the legitimacy of old leaders is failing, the reason our strategy is incoherent, the reason our age really is revolutionary, is that they are all sitting in the midst of these pulling, powerful forces. We should steel ourselves for the shredding imminence of this violence . But also – and you know this already, I think – we must prepare ourselves for the possibility of immense construction. Network power does not only pull apart. It also creates.

This paradox confused me, to be honest, for a long time. Power is, manifestly, concentrated with astonishing efficiency now. And it is more widely dispersed than ever too. We can stare at this difference, this strange polar tension and baffle ourselves as we try to figure out just how and why it moves. The best way of understanding this, I finally concluded, requires a cognitive leap, perhaps, over our usual Western way of understanding the world as either "a" or "b", as either "distributed" or "concentrated", and into a view of how opposites might ceaselessly balance into a whole. Not "a" or "b" but "a" *and* "b" at the same time.

Let me tell you what I mean: In 1132 the Song Dynasty that had ruled China for nearly 200 years collapsed in the face of an invasion by wild Manchurian soldiers from the northern plains. The Song leadership – along with its best minds and cultural figures – fled south from Beijing for a thousand miles, until they were safely on the opposite bank of the Yangtze River. They settled in a lakeside city we know today as Hangzhou. In those days Hangzhou was known as Lin'An, which might best be translated as "Gazing at Peace." The little town must have seemed to the Song leaders a perfect respite from the horror and war they had left behind. The city lay then, as it still does, along side XiHu or West Lake, a tranquil and horizon-filling stretch of water framed by rolling hills and tea plantations. The famous poet and statesman Su Dongpo later compared gazing at the lake to looking at a beautiful woman – that same fused sense of calm, peace and astonishment you might feel while considering the object of your own love. Stilled water is regarded in Chinese culture – you may recall from Lake Tai Hu where Master Nan set his campus –as a reservoir of *yin* energy. Song leaders had fled the angry *yang* energy of invasion for the *yin* peace of the south. Yin energy is associated with calm, femininity, fertility. Yang expresses action, violence, creation. Yang is the thunderstorm; Yin is the peace that comes afterwards, as the crops absorb water and grow. The idea of a balance of *yin* and *yang* is among the oldest in Chinese philosophy. "When heaven and earth were formed, they divided into yin and yang," the Huainanzi, one of China's greatest political texts explains. "Yang is generated from yin and yin is generated from yang." Hangzhou became a capital of *yin*. It produced perhaps some of the greatest Chinese philosophy and poetry and art. Greatness emerged from that stillness – and, even today, to sit by West Lake and drink a cup of the Dragon Well tea produced on the nearby hillsides is to have every one of your senses flooded by tranquility.

That yin-yang balance gives us, in a sense, a way to understand that split power on a network by seeing it is not, really, split. Network power is energetic and wild at the ends, with all the creative energy of a world filled with devices, empowered human dreams, and the violent slips of old balances. *Yang.* But at the center it is dense, still, even quiet with the silently cranking algorithms of massively concentrated power. The computer science pioneer Claude Shannon saw information in 1949 as wild, uncertain, and pulsing with the instability of an entropic system. *Yang.* The machine architect Norbert Weiner, writing at nearly the same moment in 1948, saw the digital age differently – as an expression of stability and structure. *Yin.*[102] His vision for a digital order, what he called "cybernetics," emerged from the Greek concept of *kibernetes* – the orderly steering of a ship through sometimes chaotic waters.

We now know: the humming webs around us are both. They are ordered and structured. [103] Good and evil. Power in this connected age is concentrated *and* distributed. Each feeds the other. The crops need the thunderstorm; the thunderstorm feeds from the heat radiated off the land. Or: The *yang* violence of the Manchurian wars bred the conditions for the *yin* renaissance in Hangzhou. The massive distribution of connected points creates revolutions, economic disruption, crackling innovation. But it also creates a need for more centralization, more agreement on protocols or platforms. This idea of opposites balancing into a whole is not unique to Chinese civilization. You can find it too in ancient Greek or Roman tradition. Heraclitis, for instance, insisting, "All things are one." Or in the view that there can be no love without hate, no stillness without chaos, no beauty without the unbeautiful and fortunately – as we're about to see – no destruction without creation.

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[102] **The computer science pioneer**: See D. Bawden and L. Robinson, "Waiting for Carnot": *Information and Complexity*. Journal of the Association for Information Science and Technology, 66: 2177–2186; Norbert Wiener *Cybernetics, or control and communication in the animal and the machine* (New York, NY: John Wiley and Sons, 1948); Warren Weaver, "Science and complexity", *American Scientist*, 36(4), 536

[103] **They are ordered**: Carlos Gershenson, Peter Csermely, Peter Erdi, Helena Knyazeva, and Alexander Laszlo,"The Past, Present and Future of Cybernetics and Systems Research", arXiv:1308.6317v3, 23 Sept 2013

Chapter Five:

Fishnet

In which we learn why networks spread so quickly.

1.

In 1959 a young aeronautical engineer named Paul Baran, who had been working at Howard Hughes' aircraft design factory in Los Angeles, arrived for his first day at work at a low-slung, modern building along the Santa Monica beach in California. RAND – a stylish 1950's acronym for Research & Development – had been established by the US Air Force with an ambitious aim: How might the best minds of math and science be bent to the purpose of winning the Cold War? RAND was a dream destination for many researchers, offering a fusion of patriotism, technology and California sun. The place became known for a relaxed, intellectual atmosphere – an energy of open creativity that belied the dangerous, nuclear-tipped problems sitting inside its locked safes and eager minds. Shortly after settling in, Baran was given one of the most troubling, deeply secret of these puzzles.

The Cold War was then in its early days. The debate over how to manage an age when it was, for the first time, possible for humans to destroy the planet was colored still by fresh memories of Hiroshima and Nagasaki. It was charged too with the fear of communist expansion, not an unreasonable worry for Americans who had just fought a world war against two other, dangerously totalitarian forces. A cold fear lingered in the minds of many citizens and military planners: Given a window of vulnerability, might the USSR loose a fast nuclear attack? Avoiding such a risk became a primary concern of American diplomacy and defense thinking, particularly in the establishment of some sort of deterrent to a Soviet attack. Moscow had to know, and trust, that any attempt to strike-first would be met with a devastating reply. "The chief purpose of our military establishment has been to win wars," the nuclear strategist Bernard Brodie wrote in a 1946 memo. "From now on its chief purpose must be to avert them."[104] Deterrence rested on this hope that the USSR would be persuaded not to launch a snap-strike because of the certainty of a nation-levelling reply. This logic, this "balance of threat" depended in turn on America's ability to launch such a strike. If the Soviets could wipe out America's ability to respond, then Moscow's leaders might move first, snap of America's claws, and then pick the world apart at their leisure. If Krushchev's famous, mocking dangerous "We will bury you!" line from 1956 really meant what it said, then such a move would provide an awfully convenient first shovel.

In the late 1950s, when Baran arrived at RAND, the Cold War was at its chilliest and one of the most carefully guarded American secrets was this: If the USSR attacked, there might be no response. The US, with its priceless collection of bombers and missiles and million-man army, could not strike back for the simple reason that the nation's field officers would have no way to talk to each other, or to commanders in Washington. The military radio and telephone systems America depended on for her safety would not likely endure an initial Soviet strike. This was the problem Baran had been told to solve."At the time we didn't know how to build a communication system that could survive even collateral damage by enemy weapons," he recalled later. RAND determined through computer simulations that the AT&T Long Lines telephone system, a copper web that carried essentially all the nation's military communications, would be cut apart by relatively minor physical damage.[105]

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[104] **"The chief purpose of our military":** Bernard Brodie, "The Weapon: War in the Atomic Age and Implications for Military Policy," in Brodie Ed, *The Absolute Weapon: Atomic Power and World Order,* (New York: Harcourt Brace and Company, 1946) 76

The military had spent, already, a fortune on the problem. (They had spent half a fortune, it turned out, trying to hide it.) The result was an expensively designed, gorgeously featured telephone network linking military bases to strategic command posts. But because the lines and their switching centers were laced out in a pattern with just a few big central nodes, like a bicycle wheel with spokes, it had almost no chance of surviving the very thing it was designed to help prevent, a Soviet strike. If you gazed at an inked-out map of this network, with its central hub staffed by senior commanders and then radiating lines out to bases and missile silos, it even looked, well, like a target. If the USSR could bullseye those hubs with a bomb or two, the rest of the network would fold. The Soviets could do whatever they wanted: Invade Berlin, roll into France, obliterate Los Angeles. America's military would be deaf. And as Soviet missiles became more accurate, this seemed an inevitability. "We will soon be living in an era," Baran wrote, "in which we cannot guarantee survivability of any single point."

The situation, as a carefully screened handful of scientists at RAND knew, was in fact even more perilous. Shortly before Baran arrived at RAND, scientists testing hydrogen bomb designs in the Pacific discovered that radiation from their explosions fuzzed communications for hundreds of miles. A Soviet attack, even if it missed those crucial, central AT&T nodes, would still reduce American military communications to a bunch of hissing, empty phones. "Our communications were so vulnerable," Baran said, "that each missile base commander would face the dilemma of either doing nothing in the event of a physical attack, or taking action that would mean an all out irrevocable war." You could, uneasily, picture the moment of decision: Some Colonel alone in his bomb-laden plane over Europe or deep in some cornfield missile silo wondering "Launch or not?". This was a horrifying possibility. Baran began to ask: Was there some other way to send a counter-strike signal? There was a sense of life-saving preciousness in such a setting about connectivity itself. To hold it, manage it, protect and control it – in the face of the extreme pressures of a nuclear balance, such connection marked the difference between safety and catastrophe.

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[105] **"At the time":** There is a fair amount of debate about this question of if the Internet design was intended for survivability or if some other systemic need – such as linking research institutions – accounted for the distributed architecture that emerged. See, for instance, Barry M. Leiner, Vinton G. Cerf, et al, "A Brief History of the Internet", *ACM SIGCOMM Computer Communication Review* Volume 39 Issue 5, October 2009, 22-31. However, an examination of primary source documents shows the evolution of Baran's thinking clearly and produces documentary evidence for the origins of the problem he and various figures at RAND were aiming to solve. Others arrived at the packet switching model, but it is clear Baran's path to the design emerged from the security problems he was considering. For much of the information here see "Oral History: Paul Baran" *Interview #378 for the IEEE History Center*, The Institute of Electrical and Electronics Engineers, Inc. (Available online); Paul Baran, "On Distributed Communications I: Introduction to Distributed Communications Networks," United States Air Force Project RAND (August, 1964); Baran "On Distributed Communications XI: Summary Overview," United States Air Force Project RAND (August, 1964)

2.

You can, at the heart of many revolutions, find the warm hints of human psychology pressing out. This is the roiling, unscratchable instinct for change that marks a really revolutionary temperament – and that often is the only sort of personality that can imagine and then deliver a solution to impossible problems. Conservatives like things as they are, even if "as they are" is sometimes broken or dysfunctional or dangerous. Revolutionaries are different. They don't seem to choose their role. They have a vision for how the world ought to be, a vibrating and instinctive picture of power, and driven by passion or anger or faith or some wild genius, they chase that vision relentlessly, even into madness. If they are lucky, however, they live in an age where their crazy hopes catch onto some larger human hunger. Khomeini worried that the Shah would never fall. Lenin was preparing to abandon revolutionary politics in 1916. Jobs was told the iPhone could never be built as he wished. Then, in an instant, revolution.

We might ask: What set Martin Luther on his revolutionary course to demand instant access to God? Luther would tell you that his first inspiration had come to him one night in the summer of 1505, while he was walking home in a thunderstorm, when a lightning bolt landed a foot or two away.[106] Luther had been struggling for years with an inner battle, with a tension between his faith and what it demanded of him. Then, when that lightning cracked free from the storm, a sensation of total terror was replaced by a new feeling. The nearness and power of God snapped past him in that moment. It clarified everything. He dropped his law studies the next day and within a year he was an Augustinian monk, preaching – often hundreds of sermons a year, ever angrier, ever clearer – about the closeness of God, the real, tangible, bolt-from-the-blue passage of faith to faith. He was totally, completely converted.

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[106] **Luther would tell you**: Albert Beutel "Luther's Life" in Ed. Donald K. McKim, *The Cambridge Companion to Martin Luther* (Cambridge: Cambridge University Press, 2003) 4

Long before Paul Baran dreamed up the networks that were required to solve the "deaf, dumb and blind bomber pilot" challenge, he lived through the sort of moment that left an indelible psychological mark – one that remains visible in the revolution he made, as Luther's lightning-bolt of faith is in the unadorned churches and simple liturgy of Lutheranism. Baran was born in Grodno, Poland in 1928. His father had an uneasy sense about what was coming to Europe and he moved the family to America when Paul was six. *Pesach* Baran became *Paul* Bran in America, a model student, a prize-winning mathematician and eventually at Hughes and Rand he established himself as one of the great American engineers of his generation. And like so many refugees of that era, the sharp, irreversible exodus left him with a question. How, exactly, to stay connected – to family, to tradition, to history? As the murderous mist of Nazism swept over Europe, the problem took on a searching urgency: How to maintain a connection, *any connection*, in the face of utter catastrophe? As he neared retirement decades later, Baran recalled his life's work with this resonant line: "I was concerned," he said, "with survivability." The problem that animated his life as much as it did his networks.

Two years after arriving at RAND, Baran began to discern the outlines to a solution to the dangerous problem of American military communications. In a series of lectures for Air Force officers starting in the summer of 1961, Baran began working his way towards an answer, speech by speech and equation by equation. He didn't fully know where he was heading when he began the talks, he said, but he had an instinct that some other design must be out there, some completely fresh way to handle the "survivability problem" and by the end of his lecture tour, he had found it.

Baran's new design for a durable network had begun with an idea that *didn't* work. The Pentagon, he'd thought, might broadcast thousands of coded messages over AM radio frequencies all at once as an attack approached. "We interrupt this program to say: It's Christmas in July!" Missile silo commanders and bomber commanders would cluster by their transistor radios, collecting a "launch" code with the ease of listning to a late-night baseball game. That target-shaped, "Just Aim Here" web of phone lines would be replaced by something far more distributed, harder to wipe out with a single Semyorka-7 missile shot. But this approach had problems too. It relied fatally on broadcast towers and on insecure AM radio waves. But the idea of such a widespread, insidiously untargettable network got Baran thinking. Sending out the messages and letting them find their own way had a lot of appeal, if it could be done. There would be no central hubs. Information would sail over linked lines in the way radio signals moved in the air. Military communications, in Baran's system, would bounce from point to point on this tapestry, at each stop being re-directed towards their intended destination. The resulting network, if you drew it out, would look like a fishnet: Lots of links connected to a few knotted nodes. And because the bundles of data, Baran called them *packets*, could be moved by the network itself, you could cut or nuke or sabotage the net in a few places and still use it. The packets would would find another path. Even a badly ripped up and irradiated network could, in theory, carry a "launch" – or a recall – message safely from the White House to a bomber pilot.

"The early simulations," Baran recalled, "showed that after the hypothetical network was 50% instantly destroyed, the surviving pieces of the network reconstituted themselves within a half a second." That was a way of saying that his messages were finding new routes on the network even after huge parts of the system had been taken off line. And they were doing it nearly instantly. Better still, as he began to model these fishnet, "distributed" networks, Baran discovered that they were not only capable of surviving attack, they were also incredibly efficient. "If built and maintained at a cost of $60 million (1964 Dollars)," he calculated, his design would, "handle the long distance telecommunications within the Department of Defense that was costing the taxpayer about $2 billion a year."

Baran travelled the country for most of 1961 and 1962, classified presentation and slide-rules in hand, trying to persuade skeptical generals, engineers and other scientists. It was, he found, a nearly impossible task. He recalled a visit to the towering AT&T switching headquarters on Thomas Street in Lower Manhattan. It was,an implacable temple of the high-priests of hub-and-spoke network design. That one building handled more telephone and telex traffic than nearly any other single point on earth. Surely the place was very high on the USSR first-strike list for exactly that reason. So Baran expected a friendly reception. After all, he'd be telling a bunch of men with a uranium death sentence that he'd found a way to get them off the Soviet target list. His new "mesh" network would mean that bombing AT&T would be largely pointless. It wouldn't blind US commanders. If only they'd redesign their network, the AT&T engineers might save their own lives. They thought he was insane.

"I tried to explain packet switching to a senior telephone company executive. In mid-sentence he interrupted me, " Baran recalled. "The old analog engineer looked stunned. He looked at his colleagues in the room while his eyeballs rolled up, sending a signal of his utter disbelief. He paused for a while, and then said, 'Son, here's how a telephone works….'" Of course Paul Baran knew how a telephone worked. You jacked one point to a switch to another point. That was the problem. This was why AT&Ts design would be absolutely useless in the face of the catastrophe he'd been told to prevent. Baran was, nerve and blood and bone, as an analyst, and even as a refugee perhaps, alive with the imperative of survivability, of how connection might mean the difference between war and peace. Those morons in the AT&T building? What the hell could they be worrying about?

But it wasn't just that $2 billion annual check from the US Defense Department those wizened phone wizards were seeing vanish in Baran's fishnet, it was a whole way of thinking. The AT&T scientists wanted to control the addresses, the routes, the timing of messages from the center. This sort of authoritarian design appeared more efficient to them; perhaps it was even more psychologically comfortable since it matched their own experience of being commanded and controlled. Karl Wittfogel, the historian who identified the water totalitarians of ancient China or Egypt, would have recognized them: *Switch Despots!* "We had arrived at a conceptual impasse," Baran reflected with the mild confidence of a man who knows he will eventually win. He moved onto the next stop. Same result. And the next. Same result. Eventually Baran's engineering colleagues back at RAND were so affronted by the routine dismissal of his logic that they spoke up. They had seen the classified briefings. They knew just how easily the nation could be hobbled – and their Santa Monica building was surely on some target list somewhere too. RAND's scientists demanded a detailed, critical study of the "distributed network model". By the time they were finished, the Air Force was preparing to begin construction.

Survivability. Plucked from that impossible looking puzzle was the first honestly distributed network. You can sense the power of this inversion: A network with no central control, survivable, uncuttable. The earliest large network built on the Baran's principles became known as ARPANET, the Advanced Research Project Agency NETwork – a mesh of connections that, even today, serves as the backbone for parts of the Internet. Even with the risk of nuclear war (hopefully) long gone, packet switching networks of one sort or another still account for most of the data moving in the world. Think of how true, how heat-hardened and useful an idea must be to endure more than fifty years of technological change. And all the efficiencies Baran first predicted 50 years ago on his slide rules are still at work. Every time you make a call, share a video or ask a machine to think for you, that whole transaction likely takes place through fishnet routed packets. If we had stayed with that old AT&T model, we'd be living in a different world. Riots would be flipped off with a single switch. Data flows would be monitored with the ease of watching a subway turnstile. The far flung, wild creativity of our plug-and-play connected world would be stilted, stifled. Each additional connection to the system would demand bureaucratic central approval by the Switch Despots, concerned more with their own power more than their survival. Instead, we have a slice-resistant mesh that has grown by a billion times over, with its original architecture largely intact.

Packet switched systems such as the Internet mean that anyone with some string and an ability to tie knots (which, in tech-speak, is anyone with some blinking fiber optics and a TCP/IP connection) can add themselves into the global web. They can connect. They can share. Practically, this is why you can so easily snap your phone or tablet on and touch, more or less instantly, a whole world of data. Every minute now an additional 10,000 devices are connected to the Internet. Medical tools, Bitcoin mines, airplane diagnostic systems – and of course wired citizens, smart-phones and laptops and tablets. This ease of connection is an implicit part of a Seventh Sense worldview. Anyone can connect. It's as fundamental as Luther's "Let anyone can speak to God." Or Kant's "Dare to know." When someone says "Why would anyone want to share photos with the world?" or "Why would you ever hand your DNA over?" they are missing the point that many objects now are only complete or useful once they're connected. When we say "connection changes the nature of an object" we're nodding towards the idea that constant connection is almost a kind of *right* for devices and programs and people. Anyhow, it is certainly a kind of yearning.

When we described network power as stretched between distribution and concentration, we should understand too that it is this design of Baran's that permits the easy spread and accumulation of links.Terror cells or social networks or financial markets all lay out in this fashion. Wide-open, convenience-making links are expanding, and they serve as a kind of global nervous system, more sensitive with each passing generation. These lines of connection run two ways, of course: Networks permit any of us to connect to nearly anywhere, and to unimaginable technological power. But, at the same time, the world connects back to us. Wired jihadis and currencies and bio bits – they're all tied in with us too. So yes: We're murdering the exotic with our data connections and machines and discount plane flights. Should we be surprised when, from time to time now, the exotic shows up and murders us right back?

We've seen, now, the way in which that pulling connection between center and periphery – that tension of our network – pulls apart old structures. And this is the first, urgent Seventh Sense understanding: Connection changes the nature of an object by placing it on this tense mesh. Connect a patient, a doctor, a flying machine, a currency – each is twisted and changed as a result. Some become great. Others snap, never to be rebuilt. Some adjust, painfully. The pulling network action accounts for our greatest new fortunes but also the tumbling of old ideas and institutions. This is why our age is so uneasy. This is also part of the picture of network power we have to keep in mind, the image of a stretched skein plucking apart old structures. Baran's fishnet grows, it locks everything it touches into a new structure, one that resists the "arrest the usual suspects" sort of interruption. We've said: Connection changes the nature of an object. To be connected to a Baran-style system instead of a brush-cut 1950's AT&T system makes a difference.

The connected devices themselves are constantly improving. Back in Baran's day, dozens of scientists counted themselves lucky to share a single computer. A few decades later, the PC revolution gave everyone their own machine. And now, of course, we each have many computers in our lives: phones, wired TVs, computers. Because of connection, we have access to thousands of such devices in data centers.[107] We can touch them in an instant, a fusion of software and hardware and connection that we are starting to know lean on as "everyware." This now commonplace magic was formalized back in 1965 by Gordon Moore, one of the founding engineers at Intel, who noticed the rather amazing fact that since the introduction of integrated chips in 1959, the number of transistors on each tiny chip had been doubling every two years.[108] It seemed hard to imagine this pace could endure, but then it did and does, something known as Moore's Law. Back in 1997 Andy Grove, who followed Moore as CEO of Intel, the chip giant, was named TIME's Man of the Year. I wrote that story and I remember Grove telling me, in a confessional spirit: "I never stopped thinking about the business. I worked constantly. But when Gordon Moore left the office, he left the work. Mostly he'd go fishing." Moore had the certain confidence of a man who had spotted one of the fundamental laws of our age, the compression of computing power and cost. He had the "Let's go fish" air of a man who had seen the inevitable. Grove, who as CEO had to match the wild speed Moore's Law suggested, had the total unease of a man aware of just how fast a pace the inevitable was setting. Competition was everywhere. One mistake sustained for six months could kill the entire, multi-billion dollar business. It had happened to other firms. Often. Grove's motto was best captured in the title of one of his books. *Only The Paranoid Survive.* Each man was right in his way. Moore's law makes ever cheaper and more functional devices spread. But Grove's famous anxiety was honestly earned too: So much speed. So much connection. Paranoia does seem the best reaction.

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[107] **And now, of course**: Richard Harper, Tom Rodden, Yvonne Rogers and Abigail Sellen Eds*. Being Human: Human-Computer Interaction in the year 2020,* (Redmond: Microsoft Research Publication 2008)

[108] **This now commonplace magic**: Chris Mack, "The Multiple Lives of Moore's Law: Why Gordon Moore's grand prediction has endured for 50 years", *IEEE Spectrum* (March 30, 2015), accessible online.

You have to wonder what that eye-rolling AT&T senior telecommunications engineer who so mindlessly lectured Baran would have made of this new world. The old New York City temple of phone switches where they met in 1961 has been remade into a luxury condominium now. The company's impregnable billions of dollars of long distance revenue were eroded and then basically destroyed by free packet-switched services running along the Internet. *Son, let me tell you how a phone works.* What must Baran have really thought? Massive, widespread connection changed everything. Including how a phone works. Baran eventually left RAND. He founded several of the most important (and lucrative) companies of the early Internet. Years later he understood with more precision what exactly had happened: The real risk to those vulnerable AT&T systems wasn't Russian missiles. It was an information bomb of sorts, a concatenating desire for constant connection that exploded many old tools of control. Yes, it took out the old structures. But, because of the very way it was architected, for survivability, it had a remarkable feature that even Baran had not quite expected: It enabled each of us to create too.

3.

We're surrounded by so many networks now where relations and ties of all sorts produce a constant, hard-to-predict, "I never thought of that before," dynamism. Of course you have to pity those AT&T wizards a bit. *Let me tell you how a stock market works.* Or *let me tell you how a biologist works.* None of these have quite the same answer as they would have two unconnected decades ago. Economies, ecosystems or our politics or immune systems are charged with this energy of expanding complexity. Innocuous looking devices or people take on peculiar, sometimes dangerous aspects when connectedLinked networks of money or people or bugs tumble into wildness over and over, in ways we can't quite anticipate or explain.. "There are systems of crucial interest that have so far defied accurate simulation," the scientist John Holland observed in a famous paper that helped establish the discipline of "Chaos Science". [110] Holland spent years considering these puzzling, hard-to-model systems and spotted at least one regularity: Whether it was webs of finance like the futures exchange or immunological networks or our own brains, highly-connected systems shared what Holland labeled an "evolving structure" – they never stayed the same. They seemed to shift, with an easy plasticity, in response to internal pressures or external changes. In the process, they took on new forms. In many cases, they became better, stronger, more adaptively fit. It wasn't simply that the unexpected appeared, it was that the systems were evolving. We talked earlier about how political and economic ideas like serfdom or divine right fade into history as new forms – a congress, a stock market – are born to replace old ones. Holland thought the world filled with such evolutions, no different than species adjusting (or not) to a hotter climate or some fast new predator. He called the networks that produce these sorts of innovations "Complex Adaptive Systems".

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[110] **"There are systems":** John Holland, "Complex Adaptive Systems", *Holland, John, Daedalus*; Winter 1992; 121, 1, p. ; Research Library pg. 17

When Holland chose the word "complex" he was making an important distinction. C*omplicated* mechanisms can be designed, predicted and controlled. Jet engines, artificial hearts or your calculator are complicated in this sense. They may contain billions of interacting parts, but they can be laid out and repeatedly, predictably made and used. They don't change. *Complex* systems, by contrast, can't be so precisely engineered or guessed at with much real certainty. They are hard to fully control. Human immunology is complex, in this sense. The World Wide Web is complex. A rainforest is complex: It is made up of uncountable buzzing, connecting bugs and birds and trees.[112] Order, to the extent it exists in the Amazon basin, emerges moment-by-moment from countless, constant interactions. The uneven symphonic sound of *L'heure Blue*, that romantic stopping point at dawn when the night retreats bug by bug and you can hear the forest wakeing bird by bird is the sound of complexity engaging in a never-the-same-twice phase transition.

The word "complex" comes to us from the Latin world *plex*, which nods at the interwoven, layered nature of any object[113]. What looks simple – a flower, our skin, the value of a dollar bill – is in fact *plexus,* loaded with twitches and influences. In that stitching of new links, countless interactions sort of inevitably hiccup into unexpected states and ideas and objects: financial panics or disease epidemics, banks and revolutions. Traffic during rush hour is a complex system like this – the atomic, moving bits of the system, of cars and pedestrians and bicycles together determine the ultimate state of the system: jammed or no. Los Angles at 5 p.m. on a Friday isn't designed centrally; it's honking and confused and aggravated rush hour logic appears – slightly different every day – from interaction. . As any system fills out with more actors and more types of connection, it becomes more complex and harder to predict. Complicated systems don't produce uncertainty in this same way; appealingly, they just run. Strapping a complicated object to the wing of a passenger plane makes sense, even if it takes decades of refinement to real reliability. A complex object? Not so wise.

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[112] **A rainforest:** Simon A. Levin, *Fragile Dominion: Complexity and the Commons*, (Reading, Mass.: Perseus Books, 1999)

[113] **The word:** Carlos Gershenson, "The Implications of Interactions for Science and Philosophy", arXiv:1105.2827v1, May 13, 2011

Most of our networked world is a pool of buzzing, fresh interaction – not only hard to predict, but constantly on the sharp edge of making something new. Scientists like Holland call this "emergence", the way that bottom-up interactions – between cells or chips or traders or cars – create a larger order, often something that was not there before. The fundamental uncertainty of this process means it's often excluded from the way we look at the world. It's easier to assume a predictable, linear, complicated logic is at work. An "a leads to b and c" sort of logic: revolution leads to freedom which leads to democracy, for instance. That such predictions are often wrong – and that we're so often surprised by events in economics or politics – is a reminder that compicated systems are often complex, lit with mechanisms that almost gleefully snap off the fingers of meddling, confident planners. Too often we look at some puzzle – Iraq, income inequality – and think it is merely "complicated." We should know better. "Macro models failed to predict the crisis and seemed incapable of explaining what was happening to the economy in a convincing manner," the European Central Banker Jean-Claude Trichet lamented in the aftermath of 2008s cascading, complex financial crises, when markets and officials discovered that the problem with their system was not merely that it was "too big to fail" but also "too connected to manage" – and possibly "too complex to comprehend." Trichet sounded a little shell-shocked. "As a policy maker during the crisis I found the available models of little help. In fact, I would go further: In the face of the crisis, we felt abandoned by the conventional tools."[114]

This sense of abandonment comes from an attempt to use a mechanical way of thinking in age of complexity. [115] When you think an air force can simply pound an insurgency to sand or that some old reliable business should survive because it rests upon billions of dollars of infrastructure, you miss the energetic creative and destructive power of complex connection. It's not fully right to say: Networks always beat hierarchies, because of course networks have layers and structures of their own. But it's not wrong to consider that complex systems tear easily at stiff, competitive and overly-ordered ones, even the most carefully engineered complicated ones. Think of the mafnicently ornamented dictatorships pushed to collapse in recent years. Or, can you really look at the firm where you work and feel a sense of living, flexible adaption in the face of connection?

In our age, the pressure of emerging change is particularly heightened by the very nature of the digital devices themselves. The connected and algorithmic tools all around us now lend themselves to the easy and cooperative interaction. In fact, that ability to plug into and share with one another is the essence of their power.[116] Your data-enabled phone or camera or database or stock-trading program is easy and powerful to use because so much of the world's data – your Sigur Ros songs, your home movies, your skin temprature – can be reduced to ones and zeros, freed for fast transmission, endless storage and quick analysis.[117] A machine that can blithely handle digital inputs of one sort, whether it is trading orders or music files, has the capacity, in theory, to work with any data. Such adjustability is what forces app companies, gaming businesses, or phone companies onto an exhausting treadmill of constant upgrade. Interaction between the pieces of a system, every bit as much as design or mechanical manipulation, is the reason why change happens.[118] Entrepreneurs mix GPS and phones to create a new business of tracking everything from our cars to our children. Algorithmic trading programs engineer completely virtual portfolios – you can buy the S&P Index but as your manager to strip out any performance from tobacco and gun companies, for instance. Or: Terrorists meet online and swap data. Some of the most astonishing systems of our new world have grown up this way. Google's back-end search systems, for instance, were not "top-down" designed so much as they emerged, competed and evolved to deliver once-unimaginable loads of data. No one at Google is "The Architect." There is no central approval for technology systems. Complexity and unpredictability and emergence are regarded as the best way to grow. [119]

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[114] **Macro models:** Jean-Claude Trichet "Reflections on the nature of monetary policy non-standard measures and finance theory", Speech at ECB Central Banking Conference, Frankfurt, 18 November 2010

[115] **This sense of abandonment:** Michele Catanzaro and Mark Buchanan, "Network Opportunity." Nature Physics Vol 9, March 2013 p. 121-122 or Cesar A. Hidalgo, "Disconnected! The parallel streams of network literature in the natural and social sciences", (2015) arXiv:1511.03981

Long before the idea of a smart phone or 3D goggles, the British mathematician Alan Turing anticipated their arrival when he dreamed of what he called a "universal device"[120]: A notional box that, starting from the ones and zeros of digitized data, could be constructed to do anything. Since everything can ultimately be reduced to a binary encoding, nearly any sort of data can be shared, studied, combined or remixed. This easy programmability of so many objects around us now is why our world now is more complex than, say, a world of interconnected rail cars or ships might have been. Rail cars and ships don't change much, and certainly not instantly. In the digital world, however, many of the most essential objects and nodes can be flipped around like digital Lego, connected in different ways. And because they are increasingly "always on", they are also always changing and adjusting to what happens elsewhere on the network. This is true for some new operating system dumped onto your phone that makes it more intelligent as it is for an algorithm placed into a commodity market that causes unexpected chaos.

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[116] **In fact;** Paul Phister, "Cyberspace: The Ultimate Complex Adaptive System", *The International C2 Journal*, Vol 4, No. 2 2010-2011

[117] **Your data-enabled phone:** Gershenson, p4

[118] **Interaction between:** Paul Dourish, *Where the Action Is: The Foundations of Embodied Interaction*, (Cambridge, Mass.: MIT Press, 2001) 4

[119] **Complexity and unpredictability:** Randy Shoup speech "Service architectures at scale: Lessons from Google and Ebay", on *infoq.com,* July 14, 2015

[120] **Long before:** S. B. Cooper and J. Van Leeuwen, *Alan Turing: His Work and Impact.* (Waltham, MA: Elsevier, 2013)

We said earlier that the Seventh Sense is tuned to spot the unsettling ripples that come from this fact: Connection changes the nature of an object. Doctors and voters and machines now sit, we've seen, on that stretched skin that links central and distributed power. This changes the nature of these nodes. A connected doctor is different than an unconnected one. Well, here is another insight we should know: The simple, benign looking act of connection makes *complicated* objects into *complex* ones. The moment an object clicks into a network, it is subject to all the wildness of complexity that may lie there: cascades, whipping external forces, unexpected internal faults revealed only under the pressure of connection. Cargo packages. Shares of stock. Linked to a whole system of constant evolution, even the most innocent looking point is subject to distant twitches, infections or liberating innovations. They become, as a result, complex. That old lemma of parenting – *You're only as happy as your least happy child* – can be laid upon our devices. You're as complex as the most complex device you're linked to.

Linkage to a complex network is like the difference between a boxed and a plugged-in, turned-on blender: one is dormant, one is spinning with a wild and dangerous energy. Connection can change the essence of a whole system if it is designed in certain ways, as complex forces work on what looks stable. It can, for instance, take once pliant, cooperative systems, people and tools and make them competitive.[121] Jack an aspiring college graduate into a world where complex systems rip at his finances, his data and his beliefs and you can end up with a crack in his values, a move from aspiring middle class member to who knows what: nationalist, inventor, communist, bitcoin banker. "I had no idea my doctor/aircraft carrier/phone/hedge fund could do that!" is our common sort of surprise. Contagions, avalanches, tipping points, feedback loops, infections – connectivity exposes us all to these forces. "Everthing depends on everything else," the mathemarical theorist Eugene Stanley has observed of highly connected systems[122]. On networks that hover apart, isolated from each other, small failures in one spot trigger limited damage[123]. But on highly connected systems, tiny failures tumble around, breaking things.

Networks turn everything they touch from complicated to complex. Once a mesh of connection is really flowing, it *creates*. Networks cause things to happen, in this sense. New businesses, new fortunes, new ideas. Castell's social protests emerged in this way, appearing like condensate in the cooling jar of the post-2008 economic crisis and then spreading, improving, evolving in scale and ambition faster than most traditional politicians could track. Researchers following in his wake studied the Spanish 15M demonstrations of 2011 and found it was composed largely of new, young organizations that blossomed from connectivity. Other Spanish protest groups, such as labor, anti-abortion activists or regional separatists, relied on decades-old organizations. 15M – like Occupy Wall Street or pieces of the Arab Spring or Al-Qaeda – relied on groups fresh-born into a hollow, worried political vacuum. A survey of 15M members looked like a review of new Internet companies: Young, wired, vividly unplugged from history and impossible to understand without their constant connection. They were built by leaching people away from traditional parties, the appeal was both the potential of the new and the chance to get away from the rotting smell of old politics, surely an instinct many of us feel now.[124] This is one reason it's wrong to look at the world and consider it filled merely with random events, with Black Swans. In fact, regularities and patterns appear many places on the mesh of connection that surrounds us. They can be searched and mapped and studied with the tools of data science, but of course they can also be felt. They may surprise you if you don't know how to look for them. But the regularities are there. Human history is not only made of earthquakes.

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[121] **It can, for instance:** Martin Nowak, *Evolutionary Dynamics: Exploring the Equations of Life* (Cambridge, Mass.: Belknap Press of Harvard University Press, 2006)
[122] **"Everything depends on":**"Treading Softly in a Connected World", *Quanta Magazine*, Mar 18, 2013 by Natalie Wolchover
[123] **On networks:** Sergey V. Buldyrev, et al. "Catastrophic cascade of failures in interdependent networks", *Nature* 464, 1025-1028 (15 April 2010)

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Even if it can't be predicted, complexity in any system, whether it is an Indonesian coral reef or a Russian computer network, can at least be measured. How many points are connected? How quickly and deeply do they interact? It is the multiplication of connection that produces a complex landscape. There won't be much emergence in a desert, for instance. You alone, unconnected: one point. You online: Several billion. The essential benefit of many points connected in real time is that they are an extremely fast feedback loop. This fine-tuning of action-reaction forces them to adapt and adjust quickly, as if they were runners with a coach constantly at their side. Compare the feedback loop of a marching Cairo street protest to, say, the feedback loop of the old men around Mubarak. One was capable of grabbing a new techniques and ideas in real time. The other stuck in a molasses haze of old, sweet, slowing ideas. Faced with rapid change, a fast-adapting system will nearly always perform a slow one.

When we say that networks can and will devour hierarchies this is one reason. All the businesses that have been devoured by technology firms in recent years failed to adjust fast enough. Network systems are more complex, their "org charts" are an unnerving mess as a result of their speed. But under the mess is efficiency, growth, innovation. Such systems can tip into failure easily, of course. But they also can adjust their fitness before it is too late. The design of such systems becomes, then, a matter of decisive power. And most of our essential systems now are designed for a slower age. Refiguring the global financial system for an age of instant linkage was one of the crucial conceptual puzzles of the 2008 crisis. Have we done that yet for our taxes? Our voting? Our biological security? The chaos of those few weeks in the markets in 2008 revealed new geographies of finance and speed, a mechanism that had been wired to produce fortune for a few and to inspire, as a result, regulatory desperation in men like Trichet. I'm pretty sure we'll see versions of this same sort of crisis in many other areas.

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[124] **They were built:** See Bennett and Segerberg, "The Logic of Connective Action," 759

More complexity produces more interaction, as you would expect. More pieces of a system rushing and touching and changing each other in a perpetual and accelerating dance. That process pushes, in turn, still more emergence. The easier it is to combine things the more creativity is tickled into life.[125] You hear an amazing mashup of the Bee Gees and Michael Jackson; you download the tools to make your own. In every aspect of the connected world, growing complexity breeds emergence. This is true in finance, in terrorism, in bio-development. Some intellectuals and businessmen worry that we've arrived at the "End of Innovation" now. But this is unlikely. Connected systems, almost as if they have a mind of their own, create and surprise. The complex meshes of connection growing around us now, in a sense, are like a rainforest. They hold and breed and support a range of species native to the connected climate – things that couldn't survive elsewhere, that were unimaginable in an age without connection. Smart medical prediction devices. Apps on your phone. Autonomous military robots. Self-driving cars. And we know that, lingering ahead of us now, as well, are a series of technological leaps that will breed still faster interaction and creation: Quantum computing, for instance, may yet push computer to speeds to 100 billion times faster than what is achievable with older technology. Self-taught, reasoning artificial intelltigence will spot patterns invisible to human minds, they will offer everythying from computer-assisted explanation to whole new theories of physics and math[126]. And autonomous robotic systems will press into realms where our soft human frame cannot survive – deep underwater biological cracks, for instance, or hot molecular material mixes. More data will flow back at us from each of these pipes.[127] And as it arrives it will give us an even more granular sense of our links to the world – and how they might be manipulated for still more invention. "Many biological and social theories were impossible to test because of lack of data," one team of cyber-systems researchers noted. "Now we have not only the data, but the methods to analyze it." The result, they add with a fast breath of relief that could be laid upon many sciences or theories we've squeezed from limited data: "We are recovering from extreme reductionism in science."[128]

When we say the network "wants" something, it's a useful anthropomorphism: A billion connected users want to be linked, so Facebook emerges. A trillon web pages demand to be searched, so Google appears. Making such ties produces, first, that merciless clawing action we saw at the start of this chapter, which explains the unique power (and value) of the essential firms of our age. Once that's done, however, once the mesh of distribution and connection is in place and growing, then emergence begins. The completely new appears. This is why the most successful investors or leaders of our era have a near pathological desire to push and break old systems. They do this because they have a faith, an instinct, that if they shove hard enough to snap an equilibrium, then something else will emerge. They are right. They have all the laws of physics and history behind them. In commerce, the destruction of old business models breeds new ones. In terrorism, brutal violence is more useful than bottled anger; it's a tool to speed the viral emergence of chaos (and, some hope, a new politics). What emerges from change? Fresh structures, gates that connect us and bind us .If the Seventh Sense features a nearly wild desire to smash old equilibriums it is because of the total confidence that something else will emerge.

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[125] **The easier it is to combine things:** See Eric Schmidt, "Conversation with Eric Schmidt hosted by Danny Sullivan" at *Search Engine Strategies Conference*, August 9, 2006.p.1-2 2013 Nathaniel W. Husted

[126] **Self-taught:** Michael Nielsen, "The Rise of Computer-Aided Explanation", *Quanta Magazine*, June 23 2015

[127] **More data:** Caitríona H. Heinl, "Artificial (Intelligence) Agents and Active Cyber Defence: Policy Implications" in *6th International Conference on Cyber Conflict*, P.Brangetto, M.Maybaum, J.Stinissen (Eds.) 2014 p, 60

[128] "**We are recovering**":Gershonesen, et al. p 2-4

Later in life, turning to a philosophical view, Paul Baran said that his webs, distributing themselves around the world with such smooth and relentless energy, were reflecting a kind of inevitable progress, a propensity of linked things to keep linking. Even if he did not see and name our world exactly, he likely could have predicted it. "Every object in the universe," he once wrote, "is connected (by gravity/radiation vectors) to every other object." We know now just how much truth is buried in Baran's almost philosophical words. Objects and people and places now feed data constantly into the network and to each other. This presses them to evolve, to change, to connect again. It is simply a matter of time before those connections bubble up into our real lives to change our economy, our security and our leaders. That kludgey, parenthetically weird phrase of Baran's – wired together "(by gravity/radiation vectors)" – tells us a lot. The spread of links is like gravity now. It is like radiation. Irresistible. All–penetrating and revealing the deep human truth in Baran's Holocaust-bred instincts: To survive and to connect are really the same thing.

Chapter Six:
Warez Dudes

In which the Seventh Sense reveals a secret, dangerous architecture of connection.

1.

It was my second overseas trip. I blinked my eyes as dawn broke over Europe and seeped inside the airplane. We began our descent into Amsterdam. I changed the tapes inside my Walkman. Something a bit more upbeat seemed right. Peter Gabriel. It was 1993. August.

Earlier that spring I'd heard about a plan for a giant summer computer hacking conference that would be held outside Amsterdam. "Hacking at the End of the Universe" it was to be called. I can't recall now where I had picked up news of the gathering, but it appealed to me immediately. I'd just moved to New York and had been dipping into the city's hacking scene. The "scene" was less a boiling, hip hive of action than a group of computer amateurs, curious hangers on and early IT system engineers who would gather in the grubby basement of the Citicorp Building on 53rd Street and Lexington some days after work to discuss various techniques for tricking digital systems of all types. Hacking didn't have a deeply nefarious connotation in those days; it was seen by most of us as a natural, even a healthy extension of an interest in computers. The Internet had about 10 million users at the time. The idea that, two decades later, it would connect more than three billion people or that it would put millions of dollars into the pockets of some of the people gathering in that basement was honestly unthinkable.

The bible of the group was a thin, irregularly stapled, photocopied magazine published out on Long Island by a guy who used the nom-de-hack of Emmanuel Goldstein, the hero of George Orwell's novel *1984*. The magazine was called "2600: The Hacker Quarterly" and it offered a compilation of ideas about how to fool around with systems of all sorts, from Atari gaming consoles to door locks. The name "2600" came from one of the earliest hacks any of us at those little meetings knew about, a famous 1970's trick that involved using an audio tone at exactly 2600 hertz (about the pitch of a truck's backup warning) to force the backbone routing switches of the AT&T phone system to give up access to an "operator mode" which would let the phone hacker – they were called phreakers – make any sort of call for free. The hack didn't really offer much practical pleasure except a chance to make free phone calls anywhere in the world. Once you'd mastered the trick you pretty quickly discovered there wasn't really anyone in Bombay you wanted to call anyhow.

The real appeal, the deeper joy of the game, was different: It was the sense of secret, ecstatic access. A feeling of control in the largest network on earth. At one point a phreaker named John Draper figured out that the little plastic whistles stuffed as children's toys inside boxes of sugary Cap'n Crunch cereal produced the 2600 Hz tone nearly perfectly. The hack made him a legend. He became known, inevitably, as

Cap’n Crunch. An article about Draper in Esquire in 1972 had, for instance, inspired two teenagers named Steve Jobs and Steve Wozniak to start their first company to build and sell little phreaking boxes. Woz later recalled nervously meeting the Cap’n one day in California. He was a strange, slightly smelly, and extremely intense nomadic engineer. “I do it for one reason and one reason only,” the Cap’n huffed to the writer of that Esquire article, who was a bit baffled why a grown man would find whistling into phones so appealing. “I'm learning about a system. The phone company is a System. A computer is a System. Do you understand? If I do what I do, it is only to explore a System. Computers. Systems. That's my bag,” he said. “The phone company is nothing but a computer."[130]

I’d heard about the Amsterdam conference in the 2600 hacking circles, somewhere between the debates about circuit boards and which company was best for the relatively new service of email. The gathering was organized by group of Dutch computer geeks who published their own magazine, Hack-Tic. I sent an email to the founders. One of them, a man with the improbably exotic name Rop Gonggrijp, sent back an irresistible reply. “On August 4th, 5th and 6th we’re organizing a three-day summer congress for hackers, phone phreaks, programmers, computer haters, data travelers, electro-wizards, networkers, hardware freaks, techno-anarchists, communications junkies, cyberpunks, system managers, stupid users, paranoid androids, Unix gurus, whizz kids, warez dudes, law enforcement officers (appropriate undercover dress required), guerilla heating engineers and other assorted bald, long-haired and/or unshaven scum,” the invitation began. Data travelers? Electro-wizards? *Warez dudes?* I had to go. “Also included,” the note continued, “are inspiration, transpiration, a shortage of showers (but a lake to swim in), good weather (guaranteed by god), campfires and plenty of wide open space and fresh air.”

In those early days of the Internet, there was only the barest tickle of a commercial instinct at work. If anything, most of the people at places like 2600 or Hack-Tic were profoundly *anti*-commercial. They were hobbyists, as entranced by role-playing games like Dungeons and Dragons as by their clapped-together, often unreliable digital machines. It was no accident that firms like Apple had emerged from groups with names like The Homebrew Computer Club, names that suggested a rooty, self-defining hippy ethos. Everyone you met in that world fell pretty squarely into one of those weird-by-weirder categories Rop Gonggrijp had listed in his email. Their relaxed, nerdish temperament was reflected in the design of the Internet itself – open, generous, easy to manipulate, emotional at times in debates over protocols, freedom loving. The net design was, as well, a reaction against the systems that troubled all of us most. Like AT&T, say, which was closed, stingy, and tough (therefore enjoyable) to manipulate.

Jon Postel, the American engineering and programming genius who had helped write some of the essential original protocols of the Internet, summed up this point of view in 1980 as an idea that he thought should characterize the architecture of the Internet. "Be conservative in what you do, be liberal in what you accept."[131] Postel's idea became known as the "robustness principle" and it was meant to determine how switches and nodes on the net should behave. They should, Postel felt, be good at handling lots of different types of communications – they should be "robust" – but they should also be careful not to spread too much non-standard garbage out into the networks. This was an essential advance over the old ARPANET Paul Baran had helped inspire. That system worked wonderfully by itself, in isolation, as it sent humming nuclear launch codes zipping around, but it struggled when it needed to interoperate with other networks. It wasn't *generous*. The Internet that Postel and others were designing was intended to be much, much larger than ARPANET, so an ability to speak to others and be understood was essential. It was like planning an airport: You wanted to be able to land lots of different types of planes. But if someone started throw golf balls, jello and gasoline on the runway you'd have a problem. It would slow down the system for everyone. Postel was telling engineers: Be careful what you do and what you put onto the system. Take responsibility on your end. Build something that's generous in what it will handle from others.

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[130] “**The phone company**”: *Secrets of the Little Blue Box*, Ron Rosenbaum, *Esquire Magazine* (October 1971)

Be liberal in what you accept. From the first moments on the grass in Lelystad, the small town just outside Amsterdam where the Hacking At the End of the Universe conference gathered, the mad diversity that this idea suggested was an astonishing, delightful fact. As broad and strange a group as Rop's email had hinted might come was in fact there, under the trees, happily running cables from tent to RV, powering their connected routers with gas-fired generators, marveling at data transmission speeds that today, your phone might manage from an underground garage with the barest connectivity. The two-day outdoor festival was an example of human interoperability. Postel's Principle brought to life. Few of us knew most of the group. Nearly everyone was, well, not the most social. But there was instant connection, discussion, board gaming, and a degree of frank interoperating I'd never quite seen before. It was a harbinger of two decades of digital cross connection yet to come.

Of all the people at the Hacktic conference, however, among the system managers and Unix gurus and heating system guerillas (hey, everyone should have a hobby), it was the Warez Dudes who were of the most interest – both to the participants in the conference and to the white vans cruising nearby, allegedly filled with curious Dutch police. The nickname came from the "wares" they had access to, which were largely cracked open versions of commercial software that could be shared and distributed and manipulated on private bulletin board systems. The Warez Dudes were pirates. And like most pirates they had an early sense of the very edges of the law and of the smell of money drifting along new and essential routes. If hacker culture was, in those early days, a frontier society – and it was, even down to the sad shortage of single women – these were the people living on the very furthest edges of the wilderness. They fused often fantastic technical skill with the hacker's instinct for control – admixed with a criminal's hunger for profit.

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[131] **"Be conservative":** Jon Postel "DOD Standard Transmission Control Protocol" (1980) RFC 761, IED 129

The first computer viruses and worms were part of what they sold. These had appeared in the 1980s, mostly as curious intellectual exercises. There was a desire among computer engineers, a scientific sort of craving, to see what might be done on the systems they had built. It was not unlike those whistling telephone tones that had so fascinated Cap'n Crunch and Steve Jobs and Woz. Could you make the big room-sized machines twitch in ways no one had imagined? Absolute, undeniable thrill ran through this sort of activity. I can still recall returning to my office one day in the mid-1990s with a Ziploc-bag that contained a floppy disk marked "Viruses" which I used to promptly break my computer so completely it had to be reformatted. Twice. Such adventures, however, were also producing some of the best programmers of my generation. Managing tricks inside those early systems required then, as it does now, a profound intimacy with the code defining their electrical operations. (Computer programs are called "code"; people who write and test them are "coders".)

But the secret moves behind those early cracks and exploits were rarely secret for long. The informal culture of stapled together magazines like 2600 told you what you needed to know about this band: It was a group that liked to share, to brag, to indulge each other in stories about systems they had cracked open, to play with a bit of light paranoia about who might be watching you and who might care. *Computers. Systems. That's my bag.* You might as well spread some of the adrenaline rush of your adventure with others. The sense of a "shared alternate reality" most of us had first experienced in games like Dungeons and Dragons or the pages of *Dune* fit nicely into the digital world. This open, friendly temperament animated most of the people spread across that Amsterdam field, jumping into the lake instead of showers, talking math, buzzing at each other like a fridge. We had the programmer's raw fascination about what a machine might be made to do, even in ways that were deeply unintended. We were harmless. The Warez Dudes, however, were different. Their fascination was a greedy, nasty obsession.

2.

The business of playing with and inside of connected computer systems was, even as we sat on that Amsterdam summer lawn, shifting. It was slipping from earnest hobbyists and system managers to something a bit more sinister. We had just begun using a new phrase, "malware," to describe the malicious software that took advantage of Postel's "be liberal" instinct in order to devastate connected systems that were filled with too many trusting, unlocked doors. It wasn't merely the relaxed system design of the early 'net or computer systems that made exploitation easy. It was also that the networks and machines themselves were slipping with a kind of frictionless momentum towards increasing complexity. This meant, invariably, that popular programs often shipped to users with mistakes or programming oversights that invited hijack. The year before the Amsterdam conference, for instance, a cruel program known as "Michelangelo", which would overwrite the data on hard disk drives with meaningless ones and zeros, spread onto millions of computers. Once a machine was infected the overwrite command would activate every year on March 6th – a twisted celebration of the birthday of the great Renaissance artist. But because the program operated at the BIOS level – the basic input/output heart of those early machines – it was nearly impossible to eradicate. Computer security companies, soon to be known as computer "insecurity" companies because they were (and are) constantly *behinder*, responded with the following rather unconvincing advice: Turn your machine off on March 5th. Turn it back on March 7th.[132]

Even the biggest, most powerful companies were shipping programs packed with potential problems, cracks that were often baked into the design of a system, invisible even to their makers. A couple of years after the Hac-Tic conference, for example, a popular word processing program included a feature that could permit a surreptitious hacker to make a computer to execute all sorts of nefarious commands once a user had opened a harmless-looking document. This was sort of like shipping hundreds of millions of door locks that would pop easily open for criminals who knew to ask. Did you use a word processor in the 1990s? Likely your machine faced this danger: You'd open a note from a friend or a memo from your boss and you'd then instantly, unstoppably forfeit control of your computer, even if you didn't know or see or feel the impact for years. That problem was fixed – companies learned to issue what became known as "patches" to plug the inadvertent leaks in their systems – but that such a danger existed and could be profitably used was a sign of a ruthless evolution. There were billions of dollars, even then, at stake.

As technology advanced, so did the malware, which was adapting and evolving to new opportunities. Think of how hugely different our experience of machines is today as opposed to just a few years ago. Hacking has matured as fast – maybe faster. Early attacks were aimed at machines that had, essentially, no defenses. Programs like "Michelangelo" were designed to act much like the viruses of a common cold or food poisoning. They sickened and then controlled individual machines, devices with no immune systems. Hackers faced a challenge in finding ways to sneak these digital diseases onto computers, but of course they finally found holes. They hid viruses on floppy disks or inside documents or spread-sheets that appeared otherwise safe. Intelligence agencies became infamous for passing out "free disks" at conferences or littering defense contractor parking lots with infected USB sticks, waiting for some unsuspecting employee to pop them into a computer and invisibly activate some bit of carefully installed, hidden malware. Or, in a clever case of "know your target", sneaking malware into the code of some particularly violent video game, sure to be played by an adrenaline-addled system administrator in a fit of afterhours boredom.

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[132] **Turn it back on:** For a discussion of Michaelangelo see entry for *virus* in *Encyclopedia of Computer Science* 4th Ed. (Chichester, UK: John Wiley and Sons Ltd.), 1839-1841,

Like so much about our world, rapid, widespread connectivity of the last decade has sharpened these dangers. Connection changes the nature of an object; it can make it much more vulnerable. It can make the harmless dangerous. Generally, once a machine was jacked into a network, all sorts of fresh possibilities for mischief flowed right along with the data. The move from a lone PC on your desk to a really connected machine represented the difference between living in a small town and walking the streets of New York City. In one place you'd have few encounters, mostly familiar and harmless. In the other, you'd face an endless stream of the strange, the new and the unexpected. This is what life is like every day for your phone or your bank or military – a world of ceaseless assault, often from never-seen weapons. Robert Morris Sr., a cryptographic and security genius who towered over NSA code breaking programs for decades in the last century, compressed his lifetime of experience cracking machines into "Three Golden Rules of Computer Security":[133]

Rule One: Do not own a computer.
Rule Two: Do not power it on.
Rule Three: Do not use it.

He could have added a Fourth Rule: Do not connect it to anything.

Of course, as we look around today, we're furiously, enthusiastically violating all four of these rules pretty much every moment. In fact, our whole economic and social dreamscape depends on breaking them. We want the best device, we want it always on, we want to use it all the time. Utility and connection are almost synonyms now. That the Warez Dudes, or their 21st century brethren, are hungry to exploit these systems offers us a chance to understand even more deeply just how power works in this network age. Why are they so desperate to get inside? How exactly do they do it? We've seen so far two important properties of life in the network age. First, the way in which network power exists on a sort of new surface of connected devices and cores, tied by strong data links that are slowly ripping power out of old institutions. Think of my Dad's role as a doctor or the sharing economy shocks delivered by connected cars and bedrooms and labor, for instance. Second, we've seen how networks are complex adaptive systems, where emergent features –billion dollar businesses, terror organizations, drones – appear with an easy, destructive frequency that is wiping out old leaders and replacing them with new ones that better fit the demands of a connected age. Looking at the network world and seeing that mesh, seeing the emergence of fit new species and the impending extinction of others is the initial, essential part of the Seventh Sense.

Lingering deep inside the systems themselves, there is another lesson, however. And, not surprisingly, it is most alive in the hackers. "Exploit engineers," a team led by researcher Sergei Bratus has argued, "show you the unintended limits of your system's functionality."[134] Hackers, they mean, reveal the dangerous holes of our new world. The bad news is that the worst of them (and often the best of them skill wise) did this at times by swiping your data, your money and finally your peace of mind. Their fortunes and safety and curiosity – all of these are woven together in their hot hunger to touch and pull and break the roots of the network. In a world of expanding connection, they are both more powerful and more dangerous than ever.

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[133] Bob Morris cite to come

3.

Networked systems of our age are confronted, constantly, with diverse, dangerous challenges, each informed by that Gordian paradox so familiar to us by now: The more connected we are, the greater the risks. And as bank balances, secret jet engine designs, and other priceless digital data are developed and then slipped safely away on connected machines, the rewards for cracking into the systems grow – far faster than the (near zero) costs of trying to break in. "It is increasingly obvious," security researchers F.X. Lindner and Sandro Gaycken have said, "that the state of the art in Computer Network Defense is over a decade behind its counterpart in Computer Network Offense. Even intelligence and military organizations, considered to be the best positioned to defend their own infrastructures, struggle to keep the constant onslaught of attackers with varying motives, skills and resources at bay."[135] The long list of failed US government security attempts express a strange digital logic: The more essential it is that an organization keep a secret, the less it seems able to do so. A *decade* behind? That is the gap between a flip phone and an iPhone. In the hyperspeed world of technology it is like confronting a laser weapon with a hoplite. The losing race slips easily enough into Donald Rumsfeld's *aheader-behinder* dynamic, the one that haunts the paradoxes of national power we face now. *Are we killing more terrorists than the madrassas are producing?* Rumsfeld wondered. We can ask: Are we plugging more machines with more layers, software and applications than we can protect? Are we making more bugs than we're patching? (Yes and yes.) "Attackers are not like natural catastrophes," Lindner and Gaycken write. "They can analyze their targets."

Bratus, a math genius who turned to computer science out of curiosity and now teaches at Dartmouth, has spent a fair amount of time trying to understand just what happens when a computer or a network is exploited by a hacker, or "pwned" in the funny idiom of Warez Dudes language. (The phrase means to take control, or to "own" a system. The spelling is an artifact of an overenthusiastic video-game death match gloat, in which one player killed another and in his rush to celebrate typed something along the lines of "I pwned you!" The mis-typing lives today: The highest award in hacking is known as The Pwnie.) Bratus calls the resulting, pwned device a

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[134] "**Exploit engineers"**:Sergei Bratus, et al. "Chapter 13: 'Weird Machine' Patterns" in C. Blackwell and H. Zhu (eds.), Cyberpatterns, Springer International Publishing Switzerland 2014, p. 13

[135] **Even intelligence:** Felix "F.X" Lidner and Sandro Gaycken, "Back to Basics: Beyond Network Hygiene", in *Best Practices in Computer Network Defense: Incident Detection and Response*, M.E. Hathaway (Ed.) IOS Press, 2014

"Weird Machine": Computers or sensors or network webs silently made to do what is not intended. Made *weird.* Hacking is, after all, a kind of perverse programming. It involves slipping inside a target machine, and then driving it to do things it wasn't intended to do, by giving it instructions its designers never knew it might receive.[136] The process of developing and using computer bugs, Bratus found, is not unlike the most sophisticated software research. Hacker follow careful patterns. The best of them really conceive of whole systems in the way the finest data architects might. They look for particular designs, weaponize their code with a delicate elegance and aim relentlessly at total control. A normal machine does what you tell it. A weird machine does what someone else commands it to do.

How is such a system born? Well, a potential software hole of the sort that produces a "Weird Machine" might be as simple as a failure to secure computer code after it is compiled – sort of like not locking the door on your house after you leave – or a programming oversight that means a machine can't handle unexpected inputs. Take the technique of "fuzzing", for example, a famously effective way to turn a normal machine into a weird one. The process involves confusing a digital security system by throwing unexpected data into normal, apparently safe-looking procedures like logging into a mail system or transferring money by wire. Think of all the "username" and "password" forms you see when you're on the Internet. In a fuzzing attack, instead of placing a legitimate user name or email address in a registration field, hackers might add some unexpected characters known to cause a system to cough up a confused response. If you type in, *joe@user.com!'* instead of *joe@user.com* as the machine expects, the *!'* at the end of the address can baffle and stall a mis-programmed device. In some cases, that hiccup opens a vulnerability. A proficient programmer can then order the dazed computer, for instance, to open a door to the root of the system. It's as if you could walk up to the teller at your local bank and shout "Xhsuhgnnsh!!" at her when she asks how you are doing – and in her confusion she lets you into the safe. You've made a weird machine of your bank.

System designers in later generations have become much more sophisticated in trying to avoid such problems, not least because they've so often fingered the embarrassing or costly aftermath of these kinds of holes in their own code. "You do not understand how your program *really* works until it has been exploited," Bratus has said, a sentiment that hints at the stomach-lurching moment many coders and their suddenly victimized users have now had.[137] *You don't understand yourself until you've been pwned.* The odds that the endless possible glitches can ever be completely patched is honestly zero. Hackers continue to use classic exploits like fuzzing, back-doors, or rootkits – and to develop new, more intricate ways to steal a machine's mind. This race for mastery is a sprint, one that heads ever deeper into the depths of a vulnerable system. The closer you are to the very core of a computer program or a network, the more control you have. Real mastery of the heart of a system would be like having a spy win the Presidency, turning the whole US government into a "Weird Machine". That prize of immediate, high-level and totally "trusted" access remains the Warez Dude gold standard. [138]

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[136] **It involves:** Julian Bangert, Bratus et al. p2 "The Page-Fault Weird Machine: Lessons in Instruction-less Computing", Presented as part of the *7th USENIX Workshop on Offensive Technologies*, (Washington, D.C., 2013) available on www.usenix.org

[137] **"You do not really understand":** Rebecca Shapiro, Sergey Bratus, Sean W. Smith, "'Weird Machines' in ELF: A Spotlight on the Underappreciated Metadata" paper delivered *7th USENIX Workshop on Offensive Technologies*, (Washington, D.C., 2013) available on www.usenix.org

The most dangerous – and therefore the most alluringly valuable – of these sorts of attacks, are known as "zero-day" exploits. The danger they represent only becomes apparent at some awful instant, "Day Zero", when they are revealed to have been running wild inside some hapless network or machine. That first moment in the knowledge of the bug is like day zero in a cancer diagnosis, and it begins an immediate race to find and deliver a cure. Such completely unknown, secret vulnerabilities are fissures in the walls of computers that their manufacturers, system engineers, and security experts usually don't realize are there. The dream of hackers and spies and greedy Warez Dudes is a version of this trick called an "Advanced Persistent Threat" – hidden, back-door access to a machine that endures even for years, through upgrades and security checks and system cleanups, all the while forcing the now-weird computer to do things its user won't even be aware of: Send a copy of every keystroke to another machine, for instance, or serve as a robotic launching pad for attacks on other machines. All while acting like a perfectly normal machine.

The best of the zero day exploits are based not on the idea of sneaking malicious software onto machines so much as on taking existing, trusted code and finding tiny holes that can be blasted into giant, insecure data tunnels. These tools for manipulation are digital opiates, in a sense, for connected nervous systems. Such attacks often rely on errors already knit into computer systems, or innocent seeming features that can be made dangerous. Every computer and software designer knows their systems are vulnerable. Mathematicians have proven you can never be absolutely sure a connected machine is safe. A mobile phone, for instance, contains nearly 30 million lines of code. The systems that run massive cloud computing basins like those at Google or Amazon are even larger, updated every day, and have to cope with unprecedented flows of data at very high speeds. Even expert programmers will leave four or five errors in every million lines of code.[139]

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[138] **That prize:** Sergey Bratus, Julian Bangert, Alexandar Gabrovsky, Anna Shubina, Daniel Bilar, and Michael E. Locasto, "Composition Patterns of Hacking", *Proceedings of Cyberpatterns* (2012)

[139] **Even expert progammers:** For a good explanation of how a machine's code can be turned against itself, see Sergey Bratus, Michael E. Locasto, Meredith l. Patterson, Len Sassaman, and Anna Shubina, "Exploit Programming: From Buffer Overflows to 'Weird Machines' and Theory of Computation." *;login* December 2011, p. 13-21. The piece is co-authored by and in honor of Len Sassman, one of the leading thinkers of the Language Security or LangSec movement who died in 2011. Many of his talks, still available online, reflect an unusually powerful mix of philosophical and

Software and hardware manufacturers usually struggle to keep such exploits secret until they can deliver a fix, but this doesn't always work. Secrets get out. And, anyhow, even once a patch is developed, it can take weeks or months before it's widely installed. It's not uncommon, therefore, that within hours of the announcement of a newly found zero day, attacks using that method explode around the net. Thousands of hackers try to take advantage of the vulnerability, to kick at the defensive corners of systems while they are down for repair or restart – or simply left vulnerable by slower-witted system administrators who don't yet know that it is now open hunting season on a particular bit of code. Heartbleed, a "zero day" that permitted hackers to slip into your computer via holes in website and browser security, was disclosed to the world on April 7, 2014 – more than two years after it had apparently been put in place because of a programming error. Accidentally? By an overworked engineer? Deliberately? By some state security agency? In any event, two days after it was announced and long before it had been fully patched, attacks using the method grew from a few dozen per hour to millions as hackers tried to suck data from unsecured networks.[140] The exponential power of a connected system is as apparent in sickness as in health.

4.

In recent years, hacking has moved deeper still, beyond the level of software and USB drives and into the very atomic level of computers, the places where the electrons that make up bits and bytes float. The technical elegance of these micro-level hacks has been, often, breathtaking – exploits that look like Wagnerian operas compared to the Cap'n Crunch's thin, reedy weird-machine whistle. As companies like Intel and AMD began packing more memory cells on silicon wafers, for example, they noticed magnetic interference flowing across the surface of their chips like waves. Electrical signals, recall, have a magnetic element, so more tiny digital cells, closer together, is like a bowl of interacting magnets. Physics would have predicted such a result. In 2014 security researchers Mark Seaborn and Thomas Dullien, who worked at Google, discovered that they could use the magnetic vibrations on two parallel rows of memory chips to flip the electrical state of a third row – sort of like using a magnet under a table to move a paperclip around – in a way that the system might never notice[141]. This permitted them to reach "off limits", super secure areas of the machine's memory where they could do what they wanted. They called the break, "Rowhammer" and it represented an ideal and essentially unfixable hole that affected nearly every small chipset made for a half a decade. They published the

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technical consideration about modern computing systems. See also Rebecca Shapiro, Sergey Bratus and Sean W. Smith, ""Weird Machines" in ELF: A Spotlight on the Underappreciated Metadata", paper published online by Bratus.

[140] **In any event**: Leyla Bilge, Tudor Dumitras, "Before We Knew It: An Empirical Study of Zero-Day Attacks In the Real World," Paper presented at *ACM CCS '12,* Oct 16-18, 2012, p 10

[141] **In 2014**: Mark Seaborn and Thomas Dullien, "Exploiting the DRAM rowhammer bug to gain kernel privileges", March 18. 2015, Google Project Zero blog

result immediately as a warning to possibly affected victims, but the exploit hummed at such a basic level of the system that it proved impossible to fully patch. It was like trying to patch physics.

Connection changes the nature of an object. This has a particular impact on the security of our systems, and by extension, our own safety. Computer researcher Nathaniel Husted has described a world of "emergent vulnerabilities" – wormholes in software and hardware, communications or finance, that pop up in the connected universe unbidden and unplanned. "The fundamental aspect of emergent vulnerabilities and attacks," Husted writes, "are that they appear benign until certain criticality conditions are met, at which point they become malignant." [142] These risks we don't want sit right alongside all the things we do want from connectivity. In fact – and this is Hulsted's point – they *are* the things we want from connectivity, perverted into danger.

Paul Baran would have been impressed to see just how right he was, how connections between us now are like irresistible gravity waves – and how gravity always wins. In 2015, for instance, Israeli security developed an astonishing hack that proved that nearly spiritual claim that all objects were linked by connection– and demonstrated the way that slippery, hungry attacks can breach even the safest-looking arrangements. "It has been assumed that the physical separation of computers provides a reliable level of security," Mordechai Guri and his team wrote in a paper describing how they had used one isolated machine to infect another. Physical separation is, in fact, one of the cardinal rules of safe computing, a kind of lemma to join Robert Morris Sr,'s "don't connect" rule of network safety: Two machines, unconnected by a network, should not be able to affect each other. Imagine I put one kid with a flu in one classroom and a schoolmate of his in another building. The second kid should remain healthy. The Tel Aviv research team wanted to challenge this. They first placed two computers side by side on a desk, unconnected to each other by any wire or network. One machine was connected to the Internet. The other was completely isolated – it was "air gapped", like the healthy kid in the distant building, a sort of digital "boy in the bubble," in touch with only the air around it. Then, the researchers began their Houdini trick: *Look! Watch us corrupt this completely unconnected machine!* Running a set of programs on the network-connected machine, the Israeli team was able to warm the processor board of that computer like a revving car engine, eventually making it hot enough that the temperature changes were detected by sensors inside the secure, allegedly impregnable "boy in the bubble" machine sitting nearby. The heat wave triggered a fan system inside the clean machine, which in turn activated a piece of pre-installed malware that let the hot machine pwn the bubble machine through temperature variations. In a video demonstration of the exploit, you can watch the infecting machine glow ever hotter, issuing "thermal pings" as it sweats and then infects its safe, "unconnected" neighbor.[143] The heat transfer had a simple message: Nothing is safe.

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[142] "**The fundamental aspect**": Nathaniel Husted "Analysis techniques for exploring emergent vulnerabilities and attacks on mobile devices" *PhD. Thesis* (available online from Indiana University, 2013) p. v

Why put such effort, worthy of the deepest physics problems, into the challenge of sneaking into a cellphone undetected? Well, for Seaborn and Dullien, the drive was part of a "discover and publish" effort to keep the overall system clean. It is better to hack, discover and patch than to be hacked, and remain undiscovered. But these "good guy" engineers are racing against different, equivalently sophisticated, less-decently inspired teams. The development and sale of zero-day bugs is, after all, a business. Modern versions of Cap'n Crunch whistles crack access to some of the most essential financial, political and security data stores on the planet. As the power and value of hacking targets has increased, so has the price of the exploits. Public "zero day markets" sponsored by companies like Google and Microsoft pay hundreds of thousands of dollars to researchers who discover holes in their systems. "Better to find them ourselves," the thinking goes. Though that does not always make the embarrassment less acute when holes are spotted. At one of the most carefully watched public hacking competitions in early 2015, for instance, a skinny, smiling South Korean named Jung Hoon Lee took home $225,000 in prize money by pwning a series of some of the most important, common programs on the planet, Apple's web browser Safari and Google's Chrome among them. These systems had been constructed at the cost of hundreds of millions of dollars. They'd been assembled under the gaze of some of the best PhD-led computer scientists in the world. Jung Hoon Lee's exploits ran through their complete defenses in less than a minute. [144]

As good and fast as someone like Lee might be, he's nothing compared to what the best hackers do. They don't work in public or compete in hotel ballrooms. They don't brag. And they develop ideas that make $225,000 look like a bargain. These successors to the Warez Dudes work for cybercriminal billionaires, for intelligence agencies, and even (often) just for themselves. They help find and deploy the sorts of really deep system exploits that enable brazen cyber thefts of millions of pieces of personal data or attacks like the Stuxnet virus, which caused thousands of Iranian nuclear centrifuges to vibrate themselves apart. And they do still more: Most of the attacks we've talked about so far occur in installed, running boxes. But the companies that make those boxes oversee a whole, vulnerable process of building and testing and designing and installing them. And it's here, with billion dollar budgets at work, that some exploit teams make and leave vulnerabilities that they can later, ruthlessly exploit. Every step of that gestation – from sneaking secrets into early code bases to intercepting and rewiring routers as they ship overseas – is now an opportunity for secret control. Or for unanticipated risk, for "emergent misbehavior" that defies simple analysis. You can't predict where you might be attacked by merely looking at the possible holes in each piece. Rather, it's the whole system that breeds risks. It acts in ways that the designer could not have predicted in advance. "Clearly the system itself is misbehaving," the researcher Jeffrey Mogul writes of his study of various cases where networks are cracked in this fashion. "However, none of the components have failed per-se."[145]

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[143] **In a video:** For a description of this exploit see Mordechai Guri, Matan Monitz, Yisroel Mirski, Yuval Elovici, "BitWhisper: Covert Signaling Channel between Air-Gapped Computers using Thermal Manipulations" (2015) available on arXiv:1503.07919 [cs.CR]

[144] **Jung Hoon Lee's exploits:** "Chrome, Firefox, Explorer, Safari Were All hacked at Pwn2Own Contest", *PC World via IDG News Service* Mar 20, 2015

The complexity of the systems themselves has been, not surprisingly, mimicked in the design of hacking attacks. What was once done by a single Warez Dude is now handled with division of labor, technical specialization and intensive pre-attack research. Every innovation in "righteous malware" is quickly copied and used in dangerous attack tools. The clever modular design of Stuxnet, for instance, was studied by criminals and was found years later still echoing in weapons aimed at banks, credit card companies and health insurance firms. "We are not experts in military history, doctrine, or philosophy," cybersecurity researchers Stephen Cobb and Andrew Lee have written, "so we are unaware of the correct word for the following category of weapons: the ones you deliver to your enemies in re-usable form." Cyberattack systems can be dangerous not least because they boomerang. They are delivered intact, primed for re-use to enemies who may choose to bounce them back at your banks, hospitals and electrical grids. "Righteous malware is unique," Cobb and Lee conclude. "You are giving away your weapons, tactics and designs simply by using them." [146]

It's not only American services hunting and using such backdoor keys and battering rams, of course; not only the NSA that sees its viruses retooled and reused. Computer security researchers describe opening up the laptops of unwary business travelers and finding the machines blasted inside by malware and other technical cancers, carefully planted by a half-dozen intelligence agencies and criminal organizations. It's like discovering a closet full of spies in your house, each being careful not to step on the other's toes as they watch and listen to your life. *Why is my computer so slow,* a government official in a Eurasian capital might ask. It is because it has been simultaneously pwned by Americans, Russians, Israelis, Chinese, and maybe a local Mafioso or two – and their code is not running smoothly.

A couple of years ago I had a naïve moment when I thought, perhaps, it would be possible and in everyone's interest to go back to those simpler, innocent Hacktic days, when information about vulnerabilities was widely shared and easily discussed – and holes were quickly patched as a result. I was thinking about the problem of cybertension between the US and China and suggested applying an important idea of the scientist Dan Geer to the ever more fraught relations.[147] Perhaps the US and China could work together to buy up and then publish all the zero days as they emerged, I thought.[148] Instead of the dangerous code falling into the hands of cybercriminals, Mafiosi and terrorists, the two countries could lead an effort to jointly buy any new exploit for five times what anyone else would pay – and then immediately publish what they had bought and the necessary patch. This would make the network safer for everyone. I should have known better.

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[145] **"However":** Jeffrey C. Mogul, "Emergent (Mis)behavior vs. Complex Software Systems", *HP Labs Research Papers*, 2006, HPL-2006-2

[146] "**We are not experts":** Stephen Cobb and Andrew Lee, "Malware is Called Malicious for a Reason: The Risks of Weaponizing Code" in P. Brangetto, M. Maybaum, J. Stinissen eds., *6th Annual Conference on Cyber Conflict* (NATO Publications, 2014) 71-82

The US and China and other nations were (and are) buying world-class zero days. But they were never going to publish them. They were buying them *to use*. Sometimes against each other. Sometimes, unnervingly, against their own citizens. And they needed to keep on buying and developing and hiding such tools on an exhausting, never-ending security treadmill because, unlike traditional weapons, which could be stockpiled to use whenever they were needed in the future, the holes of the most valuable zero-days might be patched at any moment, making a once devastating bit of malware instantly useless. And, as the systems matured and accelerated, this meant that they had to run ever faster to keep up. Which further reduced their incentive to "buy and publish" what they did have. Little surprise then that all around the IT universe in recent years, the incidence of reporting dangerous bugs has been declining, even as we know the number of known security holes is certainly growing. [149]

Grab the five nearest electronic devices near you and you can be pretty sure each is vulnerable; which of course means you are vulnerable too. Not merely to the loss of your secrets, but also to perversion and control. This is the cold truth: that old hacker ethos, the one spread out so warmly on Amsterdam grass 20 years ago, the *be liberal in what you accept* frontier society instinct, is dead. Weird machines and normal machines, weird networks and normal ones, people made weird by technological manipulation and those who have note – they will all, inevitably, live side by side. The more essential machines become to our connected lives, the more avidly weird and hacked the networks will become. The incentive to whistle up control of the systems, and control of those of enmeshed in them, is the only thing that seems to grow faster than the system itself.

5.

This vulnerability of connected systems is an important mile marker in our route towards understanding some principles of power in a connected age. "Read over and over again the campaigns of Alexander, Hannibal, Caesar, Gustavus, Turenne, Eugene and Frederick," Napoleon wrote once. "Make them your models. This is the only way to become a great general and master the secrets of war."[150] I sometimes feel the same reading over stories of zero-day attacks, clever hacks like "rowhammer" or the Tel Aviv heat hack. You can distill from each tale of a broken, once-secure systems an essential principle: The hackers rush always, relentlessly at the central core of a system. They aim to make it weird, to manipulate it madly from the inside out. Network power doesn't merely come from that 10 million device-per-day spread of global connectivity, after all, it also comes from incredible *concentration* of power inside certain systems we all rely on: Chips, data bases, centralized and gatekept platforms. Control of such hubs and roots of our world can influence everything; little wonder they are such an appealing target. "The conventional belief that all nuclear systems are 'air gapped' is a myth," the Russian security researcher Eugene Kaspersky has warned. The result: "There are three types of people: Scared to death. Opportunists. Don't care."[151]

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[147] **I was thinking:** Dan Geer, "Cybersecurity as Realpolitik", speech delivered at BlackHat, August 6,2014

[148] **Perhaps:** Joshua Cooper Ramo "Talking Cyberthreat with China", *International Herald Tribune*, July 10, 2013

[149] **Little surprise:** Linder Gayten Back to Basics p. 58

This sense that the systems are so vulnerable if you can get to their hearts is what lures hackers ever deeper, into the code kernels where the most basic instructions are decided. That they can often make machines weird by using the device's own code against them, like some sort of autoimmune disease, is only a marker of the particular perversity of the problem here. Security researchers call such holes "vulnerabilities" in a system, but of course they are much more than weak spots. They are potentially fatal. In a way, the hot rush to touch and tickle and maliciously use these already waiting cancers reveals to us the essential Seventh Sense secret of the Warez Dudes: Connection makes an object vulnerable, yes; but it can also reveal the possibility of total control, of the fundamental root mastery of a connected system. Such a hole, when it is exposed by connection and then corruption, can be complete in the scope of its damage, devastating. Lord Acton's famous line that "Absolute power corrupts absolutely," twists in this age to something like "Absolute access corrupts absolutely." Connection makes total exploitation, total control, possible.

Every new generation of connected technologies is breeding essential black boxes, complex (not merely complicated!) containers filled with algorithmic levers and code tools for digital work that can be understood by only a few people, and exploited and used effectively – for good or ill – by a still smaller group. "The greater the dependence on a technology the greater the need to study and expose its inner workings," one group of radical digital activists has argued in *The Critical Engineering Manifesto*. [152] They mean that as we turn our safety, freedom, and health over to a world of devices and their makers, we must know what goes on inside the very heart of such systems. It's not merely that everything is connected now; it's also that everything is monitored. Remebered. Studied. The Warez Dudes' drive to get ever closer to the core, to perform even that atomic level hacking, tells us something about just how much power is locked up in those central cores where this information accumulates. The 2600 hz whistle was, it seems, only the first of an endless series of battles for control of the roots and trunklines of modern power.

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[150] **"Read over and over":** Napoleon, "Maxims" from Thomas Raphael Phillip, ed., *Roots of Strategy: The 5 Greatest Military Classics of All Time*, (Stackpole Books 1985) p 432

[151] **"There are three types:"** Eugene Kaspersky Talk at the Press Club in Canberra, Australia (2013)

[152] **"The greater the dependence":** "The Critical Engineering Manifesto," The Critical Engineering Working Group, Berlin, October 2011-2014. Available online

All around us today, huge power accumulates to certain irreplaceable cores. We know this is a problem of connected age design: Giant search engines, certain algorithms, database or communications protocols overmaster us because they can gather so much data, so fast, and process it with unique fidelity. *What makes a city?* urban scholars often ask. We might wonder: *What makes a platform for network power?* The answer to both questions is the same: Density.[153] If the first cities of Aztecs or Mesopotamiaman civilization differed from early tribal clusters because of their density, the same is true for our first platforms of instant connection. Facebook is *denser* than AOL ever was. More people, more data, thicker connections. Future platforms will be denser still. And if cities and density were once sadly unanticipated accelerants to plague, poverty and revolution, we should be aware of the risks of our own tight-clustered centers of dense connection. The security of these cores that link us to each other and our essential data – when jacked by hackers, by companies, or even by fast algorithms we don't understand – is important not merely because of the possibility of total control a breach might represent, but because they show us the very fact of such totalizing control exists. To infect, surprise, sicken – all this is alluringly possible and dreamable for anyone with a hunger for mastery. Imagine if you knew your government could be switched instantly and invisibly to malice. (Or, to effectiveness!) Or picture a nation of connected citizens wired for flash-started nationalism and hate. Such a possibility exists on linked systems. This potential for total, weird control of the cores – and thus total control of anyone connected to them – should force us to wonder a bit. Every evil thing beats in those central nodes: The power to manipulate, to master, to destroy even. With such access I can change what you know about the world, how you vote, where your money sits, what you remember, how soon we spot (or don't) a slipped knot in your DNA.

"Just like every drinking binge ends at vodka, so every hacking session ends at kernel.org" Thomas Dullien, the mathematician and good-guy hacker who won a Pwnie in 2015 for lifetime security achievement, observed once[154]. So much power in a connected system lies at its root: Kernel.org, for instance, is the reference copy for LINUX computer code that powers most digital machines on earth, sort of like the original DNA of the net. To manipulate Kernel.org would be to reach into the very spine of the Internet. If the aim is control, if it is to find and exploit the most fundamental of cracks in the surface of the black boxes, to get even deeper inside, then inevitably kernel.org or it's equivalent in any system is the ultimate target. Hackers might start with beer (your phone), a few glasses of wine (your office email system), but what they really want is full blotto (kernel.org). Such central black boxes exist in any linked system and they represent, at once, both the greatest accomplishments of our most masterful systems designers and the point at which other, as masterful digital machinists direct their most relentless attacks.

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[153] **What makes a city?:** Colin McFarlane, "The geographies of urban density: topology, politics and the city." *Progress in Human Geography* (2015) p. 2

[154] **"Just like every drinking binge":** Halvar Flake/Thomas Dullien, "Why Johnny Can't Tell If He Is Compromised," speech delievered at *Area41 Conference*, (Zurich, June 2014)

Dullien saw something else too as he considered the work of hackers. Comparing system cracking to drinking wasn't an accidental, funny aside for him. Hacking *was* almost a kind of addiction. It became a chase after a bigger and bigger high, which in computing terms meant a race to compromise as many machines as possible. Rapid escalation, a loss of self-control, the need for more and more – all these are the hallmarks of the best widespread attacks, which aim to expand the "compromise boundary" until every machine has been made sick. This is why stealing source code, the original instructions that lay behind any computer program, are such a prize for Warez Dudes. Source code is the DNA of the black box, in a sense, it can be used break into other machines to, well, steal still more source code. This looked, to Dullien, an awful lot like addiction. And it's not just lone teen hackers looking for a dopamine jump who were chasing machines with a blind addicts urgency. It infects governments too. "Surprising realization (at least for me) after the Snowden leaks," Dullien observed. "Hacking is so addictive that entire organizations can become addicts and show addict-style behavior."[155] This was the NSA or GHSQ or who knew what other intelligence service, for instance, in a feral hunger for more and more and eventually all data. And the ultimate high? Imagine if you could crack the CA, the Certificate Authority that provides proof that anyone working on a network is trustworthy. CA "trustworthiness guarantees" are keys that permit access to any computer, phone and network. The whole connected world depends on CAs to know if software is safe. To control the CA would be a dream for an addicted organization, like a set of keys to the local pharmacy. No lock would really serve much of a purpose. You could touch the beating heart of any machine on earth. The ultimate black box. We should all hope the CA, at least, always remains pristine in this dangerous world.

It was hacked in the summer of 2011.

6.

Dullien's observation that "every hacking binge ends at Kernel.org" touches something far deeper than just the world of hackers. Sure, that urgent drive to get to the very core of systems is a very specific, unquenchable digital thirst. It's where the most power is, as we've seen. There's a rush in getting there: When brain researchers found a spike in dopamine levels of university students engaged in password hacking, that was hardly a surprise to anyone who's ever written or used an exploit.[156] But the real drive to get inside is about more than an adrenaline rush. Remember that network power, the power that we're trying to figure out how to bend and shape for our own security, exists in a kind of dynamic tension. It's like a stretched, taut fabric spread between concentrated cores and billions of connected users or devices. The logic of spreading and distributed power, the force that makes the network bigger, is driven by Baran's principle of open design, and by our own hunger for communications and connection and cool new devices. But there is another side to this tension.

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[155] **"Surprising realization":** Thomas Dullien, "Offensive Work and Addiction", keynote presentation delivered at *ISACA Nordic Conference* (2014)

In a sense, over the years, a whole set of hot, infectious pressures descended on the network of values and friendships and easy cooperation of the Hack-Tic days. "Be generous in what you receive," had let the networks of our age grow at an incredible pace, but at the price of vulnerability, of commercial ambition, and of an eerie technological lemma that what made the systems faster and stronger might also kill them. A change in culture of the digital elite, naturally, followed. The brutal, inarguable, profitable demands of power and politics had cracked apart the unique social webs of the HacTic era. I did not like watching this sad evolution; none of us did, but anyhow it has produced the world in which our new sensibility will have to operate. The openness that we loved and craved in so many areas of life, from our minds to our markets, had now become a liability. "I remember what the Internet was like before it was being watched and there had never been anything in the history of man that is like it," Edward Snowden once observed, nostalgic for the datascape he saw melt away during his time at the NSA. [157] I realize now that there is a whole new generation of young programmers that won't ever know that original generous ethos of a place like Hacktic, a fresh cohort of the digital age that operates at levels of technical mastery far beyond anything we might have imagined in the Citicorp Tower basement 20 years ago. They will confront endless battles to get inside and exploit and make "weird" the cores of network power. They will know and design and manage instead a world of gates, built for protection. Their instincts will be for opacity and control, not openness and generosity. Invariably this shift will affect the design of the systems this new generation builds which will, in turn, affect all of us.

The black boxes and the crackers are in a dance, now, a sort of dangerous evolutionary waltz that offers a foretaste of what you and I will face as we consider the problems of attack and defense and strategy in a networked age[158]. It reminds me of an old puzzle of Chinese history: Why were the very strongest dynasties – the Han, the Ming, the Tang – always confronted by the best organized, most deadly rebels? The answer was rooted in a violent, greedy tango of the development of each side. The better a dynasty defended its farmers or its trade or its annual rice harvest, the more the rebels from the steppe had to become strategic and unified and powerful. When it was easy to pick off single farmers, then the rebels had no need to be well organized. They could be a bit lazy. Could snatch a year's undefended harvest in an afternoon. But the stronger the empire, the stronger the rebels had to become[159]. Amsterdam in 1994 was a bunch of lone, weak, unprepared farmers. Twenty years later we have a digital empire, and the attackers it deserves are appearing, refined and evolved by this same competitive logic. They are better organized, smart, intent on getting to the heart of the black boxes of power. And the more we defend against them? The better they will become.

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[156] **There's a rush:** Wael Khalifa, Kenneth Revett and Abdel-Badeeh Salem "In the Hacker's Eye: The Neurophysiology of a Computer Hacker", in *Global Security, Safety and Sustainability & e-Democracy Volume 99 of the series Lecture Notes of the Institute for Computer Sciences, Social Informatics and Telecommunications Engineering*, (Berlin: Springer), 112-119

[157] **"I remember what the Internet was like":** Snowden interview in *CITIZENFOUR,* Laura Poitras (2015)

[158] **The black boxes:** Nikos Virvilis, Dimitris Gritzalis, Theodoros Apostolopoulos, "Trusted Computing vs. Advanced Persistent Threats: Can a defender win this game?" 2013 IEEE 10th International Conference on Ubiquitous Intelligence &

That our most essential systems are vulnerable to loss of control is a chilly feeling. It is a reminder of the power of the people who know how to crash and manipulate – or build and operate – parts of our world most of us barely understand. It's like discovering someone could take over your lungs or your heart. We don't understand those devices either, most of us. But we depend on them entirely. Some of these hackers are moved to mischief by technical beauty. Some by the giddy smashing rush of breaking in, of touching the core. Others by greed or patriotism or by secret, zealous, unlawful obsessions. What the technically best of this group share, however, is a pressing desire to get as close as possible to the kernels where inarguable and even invisible code decisions are made, where digital DNA is printed in a sense, and where a total mastery of the binary guts of the system is possible. That Cap'n Crunch thrill, the dream of whistling up control over the thick, helpless trunk of a network, *that* remains the dream. Remember Conway's Law: The design and activity and control of a network redounds on, even determines the real world. If the whole network is, in a sense, filled with holes, if it contains inherently the possibility of being turned into a "weird machine" – what does that mean for the real world?

The Seventh Sense insight of this chapter, the key feeling, is that all the systems we rely on, that we think we control – financial or political or digital – can all be made weird and pwned by forces we cannot see and struggle to stop. Our markets, our elections, our knowledge – all of these, dependent on linked systems themselves, can become weird. We can no longer regard them as certain and harmless. The hacker's drive to get to the kernels is not merely an information technology problem. It's a larger statement about networks, about the way that power and danger are still and always one and the same. The desire to hack the cores of our world is a marker of just how profoundly, even secretly influential the kernels have become – in ways we're just now beginning to understand. Bratus was right, that we don't really understand any system until it's been exploited, *pwned.* This is as true

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Computing and 2013 IEEE 10th International Conference on Autonomic & Trusted Computing

[159] **But the stronger the empire:** See Turchin, p. 3

for our minds as it is for our markets. The Seventh Sense feeds a bit on the trail of hackers; it is a way to tune our protective instincts. The cracks they find and use do tell us an awful lot. But not everything. For that we need to look beyond the people attacking. What we really need is a feel for the temprament of the fresh group of innovators and investors and technologists who run and own the dark cores of power now – and who, before long, may also run and pwn each of us as a result.

Chapter Seven:

The New Caste

In which we meet a powerful group defined, enabled and enriched by their mastery of the Seventh Sense.

1.

Looking back over several hundred years of European history, the Oxford professor David Priestland found that the movement of power might be scored by reviewing the alliances and hatreds and hopes of three distinct, interacting groups. He called them "castes": merchants, soldiers and sages. By merchants, Priestland meant the bankers, traders and industrialists whose capital, goods and political power bent Europe's once-feudal economy into something modern and industrial.[160] The Medici, Dutch coffee traders, Scottish cotton barons. By sages, he had in mind the churchmen and later the technocrats of various empires, the men who helped birth and then manage the problems of an Enlightened, urban social order: Locke, Bismarck, Disraeli. And by soldiers he had in mind both the great aristocratic warrior classes of Europe and upstart, genius figures like Napoleon or Wellington – men who handled martial force with the fresh, surpasssing brilliance of a paintbrush or chisel, not an instrument of mass murder.

The aligned, shifting interests of these three castes, Priestland wrote, were like gears of sorts, each offering special leverage, meshing together to drive nations to great power. Mix the influence of France's sage-bureaucrats with her artful soldiers and you get the French Imperial period. Marry the interests of Britain's shrewd 17th Century trading bankers with her martially inclined sailors and globe-spanning Victorian dominance results. Today, of course, the merchants and soldiers and sages of our era are also at work. They sit in sovereign wealth funds, wired situation rooms and madrasas, churches and research labs. The force of America's merchants and financiers, bolstered by Washington's security caste, defines much of American power. No other nation could, at the moment, comprehensively replace what the country does with such breadth, intensity and speed. And now, all around the globe, we're seeing the emergence of what we might think of as a New Caste joining the merchants, soldiers and sages. This is the infotech caste.

What was going on in that field in Amsterdam back in the summer of 1993 was nothing less than the birth of the first figures of a connected technological era, of a new elite. This caste I have in mind is defined by their personal proximity and fingertip feel for the linked machines that drive so much of our world. They represent a tiny fraction of our population, but operate with non-linear, massive levels of influence. This New Caste clusters, in ever tighter circles of intimacy, around the systems and networks we depend on. They are building new connected financial systems. Fresh AI designs. Protocols and platforms for secure communication. Maybe one million people can write object-oriented code at a high level. A hundred thousand of them can shape that code into some sort of innovative data structure. A few thousand might be able to use it to access and manage a large data center. But get down to the couple of dozen who know how Google or Intel or bitcoin really work, the group who can make machines seem to think, who know and use backdoors at that atomic level of hacking – well, then you have a tight, powerful elite. They are called system designers, algorithmic traders, growth hackers or any of a dozen hazy and somewhat unnamable lines of work that fuse network mastery with economic, political or social power. If connection changes the nature of an object it also elevates, to a level of rare power and influence, those who control that connection.

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[160] **Looking back:** David Priestland, *Merchant, Soldier, Sage: A New History of Power*, (New York: Penguin, 2013)

Through the networks and black boxes they control, the group of transcendent talents working on search algorithms, data management and machine learning touch, at any one instant, more parts of our lives than any group of elites ever has. That many of them are billionaires as a result should hardly be a surprise. This is a caste marked by constant one upsmanship, by endless and compulsive innovation, by a cold and ceaseless fear of obsolescence. They are marked, of course, by a full expression of the Seventh Sense. Their every instinct for starting, financing, growing and using new firms or technologies or data-spinning biological tools reflects complete confidence in network power. If the leading figures of the Enlightenment shared a certainty near to faith that reason would unlock nearly any puzzle of mind or politics, the New Caste shares a certainty too, that connection can produce a new, better order. This caste battles with each other. They struggle for dominance over markets and – more profoundly – for control of the lucrative systems they have built.

My point in this chapter is simple. It is to introduce this new and powerful caste and see what their successes and failures might tell us about the world we now all share. Even now, however, I think we can make this sobering judgment: Whatever nation cultivates and trains legions of this New Caste best will rule the future. Think of the legendary Xerox PARC research lab, which in the 1970s produced not just some of the best early members of the New Caste – like Alan Kay or John Seeley Brown– but also a series of fundamental inventions that generated trillions of dollars of value[161]. The mouse. Laser printing. A graphical user interface. PARC was arguably the most economically significant small group in human history, an entire Renaissance packed into a couple of dozen offices. Just as the nations that produced the finest mariners once dominated global commerce and decided political questions, so countries (or really any group – even terrorists or criminals or bankers) that can breed, train and equip and deploy members of this New Caste will possess a really unusual power. Calling them a "caste" is not accidental: There's a way in which we are all now tied to the virtual spaces they control, much as serfs were once bound to the land by feudal lords. The Italian historian Giambattista Vico, in developing his new, scientific view of history in the 18th Century, once observed approvingly, "The Egyptians reduced all preceding world time to three ages, namely, the age of the gods, the age of the heroes and the age of men," he wrote. "During these three ages, three languages had been spoken….Namely the hieroglyphic language, the symbolic language and the vulgar language of men."[162] It's hard not to feel the new age now arrives with its own baffling and incomprehensible modes of communication. A whole freshly demanded language.

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[161] **Think of the legendary Xerox PARC:** Chunka Mui, "The Lesson that Market Leaders are Failing to Learn from Xerox PARC"; Forbes Leadership Blog / Alan Kay

In all of human history only a few languages ever evolve to become honestly global in reach and influence – English now, French in the European centuries or Chinese in the Asian imperial era. But why English? Why not more decades of French? German? "Why a language becomes a global language has little to do with the number of people who speak it," the British linguist and historian David Crystal has written. "It is much more to do with who those speakers are." What made Latin a global influential language wasn't that millions of people spoke it, rather it was *who* did: The elites at the very peak of 1,000 years of European power. What Latin *had*, in a sense, was the ears and tongues of some of history's most influential men.[163] The private, technical language that connects the New Caste to their machines, to each other and to us is one of the sources of their power. Their code marks, like a trail, the path to the cores of a vast and modern power apparatus.

You could, if you wanted, compare the New Caste a bit to an earlier generation of empire-deciding figures: Ocean explorers. Columbus, de Gama, Magellan. Backed by a primitive version of venture capital, the "risk finance" of trading houses, these discovery captains had a hunger to test their certain masteries – navigation, sailing, trade – against the uncertanties of geography, weather and luck. There was as much sheer nerve in these adventures as there was real knowledge. What lay five weeks' sailing time away from Cadiz? If you were willing to endure the difficulties, to believe in what might be out there – and your own ability to handle it – then fortune awaited. "Early intercontinental travelers not infrequently had to pay for access to distant shores by enduring bitter asceticism," the German philosopher Peter Sloterdijk has written.[164] Months at sea, risks of ocean turmoil, starvation, endless boredom – all these sacrifices marked sailing adventure. But they knew the rewards for a real mastery of the sea: Fame, riches, knowledge, adventure. Sloterdijk cites Goethe, who reflecting on the power of nautical life in 1787, defined the edgy advantage of that ocean-mapping caste in his age: They had *perspective*. "No one who has never seen himself surrounded on all sides by nothing but sea," he wrote, "can have a true conception of the world and his own relation to it."

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[162] **"The Egyptians":** Giambattista Vico, *The New Science,* (Cornell Press, 1948) 69
[163] **What Latin had:** David Crystal, *English as a Global Language*. (2nd ed. Cambridge, UK: Cambridge University Press, 2003), 7 also Shahar Ronen, Bruno Gonçalves, Kevin Z. Hu, Alessandro Vespignani, Steven Pinker, and César A. Hidalgo. 2014. "Links That Speak: The Global Language Network and Its Association with Global Fame." *Proc Natl Acad Sci* USA 111 (52) (December 15): E5616–E5622
[164] **"Early intercontinental travelers":** Peter Sloterdijk, *In The World of Interior Capital*, Polity 2013, Ch. 13

We might say the same about our New Caste, of their sense of the massive datascape on which we all sail and operate. They too head off to test their skills at coding, encryption, system design. They are almost all auto-didact – self taught as programmers or hackers or AI designers or investors. There is no established path to power for them, no route that has been marked before. No wonder the greatest figures of the era are college dropouts. This is a group that looks largely ahead: Their work demands constant upgrade. Every device is shipped imperfect. It's not to say they are completely denuded of the Sixth Sense. That their feeling for history has been stripped. But if to be honestly in love with version 1.0 of your product and then to shred it for version 2,0 does demand a certain ahistoric distance. The New Caste explorers have a hunger for fresh worlds and landscapes. To get there they endure privations of long isolation – not so extreme as a long ship journey – but they burrow deeper and deeper into systems, construct new links and new gates, in closed rooms. "When building machine learning systems, making good decisions is a strategic skill," the computer scientist Andrew Ng has said. "Every day you wake up and you are in some totally unique situation that no one in the planet has been in before. It's not a fact, there's no procedure."[165]

This is our world now. No fact, yet. No procedure. A totally unique situation that demands a fresh instinct. We can follow Goethe into our own age: No one who has not seen and felt himself surrounded on all sides by *networks* can honestly understand. If that motto of the last great epochal shift was *Dare to Know*, it was certainly enacted by the sea captains. Discovery and risk were nothing but a nervy kind of scientific experiment, where the laboratory was the Earth's surface and the tools of calculation were ships. And in our age? If we're right that our historic mandate is *Dare to Connect*, well the New Caste is certainly doing that, furiously. They are working away at much that is hidden in our world, just like those old explorers. The billions of phones or sensors or AI-rooted sensor engines spilling out around our world are stripping away layer after layer of opacity. Pictures of far away places, traffic lessons learned from movement patterns recorded by GPS-enabled phones, medical treatments refined by constant measurement – these are all knotted, one after another, into the fishnet.

If the ocean voyages of that older explorer caste mapped our world, the voyages of the New Caste are as much inward as out. They move inside the world of connected systems. Remember: Network power is defined by *dynamic tension* – the pull between center and periphery. The same dynamism is at work with the New Caste. While they are, firmly, in the business of going out and opening our eyes to the world with wider, faster connection, they are also draping huge, essential parts of our lives with an impenetrable fustian: The essential algorithms of search engines, the code of machine learning tools, the design of micro-targetted political influence campaign. The sources of New Caste power are wrapped inside layers of complex computer code, machine learning and data security protocols that few people can completely understand. The French philosopher Bruno Latour, the father of "Actor Network Theory" has called this process "Black Boxing". The better your phone works, the less you notice it. The more precisely some machine feeds you your news, the less you wonder *what might I be missing?* "Scientific and technical work," he says, "is made invisible by its own success."[166]

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[165] **"When building"**: Andrew Ng, speech at *GPU Technology* Conference (March, 2015)

The operating system and network protocols of your tablet device are opaque to you now in a way they never would have been two decades ago (when even the casual user computer had to type to a C: prompt or wildly rage at a crashed "Blue Screen of Death" from time to time). But, in fact, the system is incalculably more complex. "Each of the parts inside a black box," Latour remind us, "is a black box full of parts." And it is in the winding and linking of all these pieces that action in a connected world is made possible. "It is by mistake or unfairness that our headlines read 'Man Flies'", Latour says. "B-52s do not fly," he writes. "The US Air Force flies." Every plane that ever makes it into the air does so because of the clicking coordination of thousands of linked, black boxed systems. Your stock portfolio or your computer or your bio-sensored heart is not a lone object; it's a feature of a connected landscape.

We're surrounded now, connected to, essential black boxes we've no way of understanding and whose development and operation we've left to the New Caste. Look around you, how many screens do you see? Each is a billboard: New Caste at Work. It's not only the hardware in our lives that I mean, but the bits of knitted programming that decide how we search, when we communicate, and if we can exchange information or money. The virtual and the real are in constant contact and it's the New Caste that does the stapling. In fact, one of the magic tricks of power in the connected age is an ability to flop easily back and forth between network and reality. It suggests other dangers too. As legendary machine systems designer Leslie Lamport warns: *Computer scientists collectively suffer from the confusion of language with reality.*[167]Anyone who's ever written a computer program knows this sense: You write some code. You compile and run the program to see what happens. You go back and work on the code some more to refine what you've done. You run it again. You touch the virtual; the real reacts. This seems in a way like the most trivial thing, the writing of a computer program or an AI bot or a trading order, but in fact something incredible is underway in this easy movement from machine to reality.[168] The New Caste takes these moves, this easy slip from their keyboards and programs to our lives, for granted. They adjust code and networks and formulas; they watch the effects on us. They do it again. The idea that such a move is natural, comfortable even, reveals a new and important temprament. It draws a line betweent the people writing the code and those who are snapped about in the world they are coding.

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[166] **The French philosopher**: Bruno Latour, "On Technical Mediation – Philosophy, Sociology, Geneaology" in *Common Knowledge*, Fall 1994 Vol 3 No 2. p. 23

[167] **It suggests other dangers:** Leslie Lamport, "Computer Science and State Machines", *Contribution to a Festschrift honoring Willem-Paul de Roever on his retirement*" (Redmond: Microsoft Research, 2008). In its entirety it runs: "Computer scientists collectively suffer from what I call the Whorfian syndrome—the confusion of language with reality. Since these devices are described in different languages, they must all be different. In fact, they are all naturally described as state machines." The Whorfian problem is a linguistics observation about the way in which our thinking is limited by whatever language we have to describe what we see or contemplate.

Do you know who decided what you see when you search? Do you understand what the data on your phone reveals about you? Who will snip at and work on your DNA? Your children? Are you trading stocks against some invisible high-velocity connected master who will always be one profitable nanosecond ahead of you? In this sense, network power involves something very much like the intentional creation of concealment. Your Internet search results, for instance, contain a sharp tension. Yes, data from all over the planet, from all of history sits rather amazingly in front of you. But that bit of computer code deciding what you see is engaged in a kind of digital book burning: It's making whole sections of knowledge invisible even as it is unearthing an ever more precise answer for whatever question you have. What *don't* you see? – is a question that hints not only at what is left out of your search horizon, but generally at the way in which connected systems establish necessary gates. Part of a Seventh Sense, then, is the ability not merely to look at the virtual world and know how it becomes insidiously real, but also to feel that all the connected points of the real world – markets, weapons, social movements – must be pulled upon by code and links and networks. "Any technology depended upon," as *The Critical Engineering Manifesto*, says is "both a challenge and a threat."[169] Human experience is, we know, unboxable, uncontainable – our joy, hopes, sense of freedom, these all defy boxing. Yet here, all around us, are containers that affect our every choice. Who knows what happens inside all the difficult boxes?

The creeping, essential opacity of power now reveals a twisted puzzle, a really fresh aspect of this New Caste and the revolution they are making: As much as they are in the business of making knowledge widely and instantly available, they are also madly black boxing our world. This breeds a sly, unintended (I think) tension with Kant's Enlightenment admonition to "*Dare to Know*." Would you like to *Dare to know* why your computer is secure? How your genetic information will be studied and used? How encryption works? Mostly the answer to is: You can't know. It's too complex – and, anyhow, if we told you it would make the whole system less secure. There is nothing disingenuous here: You likely *wouldn't* understand. It *is* too complex. You'd be lost at the first turn into strange technical language, where simple words like "object" or "edge" have specific, essential, different meanings. And telling you would, in fact, expose you and everyone else to all sorts of risks. It's as if we've returned to that famous debate of millennia past, the one lingering between Athens and Jerusalem: Could the world be known and atomized and understood as the Greeks would have it? Or was mystery, inscrutability and opacity the nature of truth, apprehensible, the Rabbis said, only by its movements. Are we back at the first chapter of Genesis and its absolute prohibition against eating from the tree of knowledge. Or, from the Talmud, "For him who reflects about four things – what is above, what is below, what is before and what is behind – it would be better not to have come into the world."[170] We want to reflect about what goes on inside the machines. Can we? Should we? How does *Dare to know* face off against these impenetrable systems.

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[168] **This seems in a way**: See, for instance, Bret Victor in his speech, "Inventing on Principle" at *CUSEC 2012 Turing Complete Conference* available online.
[169] " **Any technology depended upon**":*The Critical Engineering Manifesto,* as above.

It is little surprise that places like Silicon Valley often leave a visitor with the feeling of a town where work is done in rooms within rooms within rooms. To drive along the dulled, anodyne asphalt stretch of road that runs in front of Sand Hill Road in Menlo Park almost hurts your head: Inside the offices on revolutions are dreamed, debated and funded. And it looks, for the most part, like a row of mildly prosperous dental practices. The real import of the work is, on the outside at least, nearly totally muted. The corporate structure of the most powerful tech companies are padded with this sort of deadening fustian too. Founders control the majority of voting stock; shareholders are more like lucky "users" than owners. Control, security and speed in decision-making are secured from the inside, free of exploit risk or interference. The companies are like computers. Of course the founders know where real powers sits. But this shouldn't distract us from the human energy breathing in the code itself. The programs are "permeated by all the forms of contestation, feeling, identification, intensity, contextualization and decontextualization, signification, power relations, imaginings and embodiments that comprise any cultural object," the computer science historian Adrian Mackenzie has written.[171]

Each of the parts of a black box is a black box. The famous billionaires of our technology age operate for the most part as their systems do. Their tight, well-engineered clusters of machines produce fortunes from connectivity, even as they obscure some of the deeper nature of the connections that are essential to their success. They are themselves at times obscured, human black boxes in a sense. "Linux is just an enabler," the genius programmer Linus Torvalds once observed about the code language that undergirds much of the connected world. "It's a solid base, but like all good, solid bases, it really is something that should be almost entirely hidden and out of people's minds."[172] It is a hard paradox for us. The work of the black boxes, of connected systems or protocols such Linux is miraculous. It is wonderful in so many ways. And the roots of it are, and seem like they have to be, obscure. But this cuts very fast into the arteries of a healthy democracy. "Democracy," Arthur Schlesinger wrote in his famous post-war book *The Vital Center,* "has no defense-in-depth against the neuroses of industrialism." It's easy to see how the system might also have a weakened immunity to the subversive forces of network power: Contagions of fear, manipulation of data, the subtle and invisible influence of the boxes we depend upon but don't understand.[173] Recall Francis Bacon's Enlightenment line? That human knowledge is human power? Well, what is computer knowledge? It is human power? Or something else, in its entire, hidden immensity? You have to wonder if this packing of insight and vision and control into black boxes, or the hands of a small New Caste will bleed us of our liberty as a result. "Our constitution is called a democracy because the power to make decisions is not in the hands of a minority but of the whole people," Pericles reminded Athens in his Funeral Oration 2500 years ago. "We regard a man who takes no interest in politics not as harmless, but as useless."[174] Vital engagement is the food of democratic life. To be baffled to the outside of the essential boxes of power then, seems an instant sort of cancer on liberty. What do we make of a man who takes no interest in the networks of networks that control the power to make decisions?

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[170] **Or from the Talmud**: See Leo Strauss, *Persecution and the Art of Writing*, (Glencoe, Ill.: Free Press, 1952), 21

[171] **The programs**: Adrian Mackenzie, *Cutting code: Software and sociality*, (New York: Peter Lang 2006) 5

[172] **"Linux":** Andy Meek, "Linux creator explains why a truly secure computing platform will never exist" on bgr.com Sep. 25, 2015

Perhaps you've heard of the famous manufacturing trilema: You can get something made any two of good, fast and cheap. If you want that custom table made quickly and well, it won't be cheap. If you want it good and cheap, you had best be prepared to wait. In networks a similar puzzle emerges in my mind. Systems can be any two of fast, open or secure. A computer system that is really secure can be open, but it will be *very* slow, inspecting each packet and instruction like a bank security guard watching customers in a bad neighborhood. Think of the like an airport. Want it to be fast? Secure too? Then it won't be very fast. Mostly what we want today are fast, secure arrangements for our markets, our nations, our data. So these will become, I think, ever less open.

It used to be that history was made in public: Big visible wars and social shifts and revolutions. Pericles in the Athenian square; the churning protests of Jefferson's Paris or the massing of armies. Now, however, subtle manipulations of technology, invisible to most of us and maybe even accidental, maybe weird, will produce historic-scale external effects. Changes to the network design will become political and social exploits in a sense, living versions of that atomic-level "rowhammer" hack that work on the connective energy of our world. Already social network analysis can be used to manipulate voting patterns. Soon, it will be possibly to precisely target any potential voter with a message engineered like a custom-made drug, designed to bind right to the DNA of your habits and beliefs. It represents the possibility for the complete technical perversion of politics.

As the New Caste operates on the systems that are at the core of connected politics and economics, on how we vote or think or shop, they will vibrate the system in invisible ways even when they don't mean to be nefarious. Improvements may be as dangerously unpredictable as bugs. Small changes to algorithms or links or protocols mean our whole system may be pwned before we're quite aware. Such adjustments will be started and managed and mined for fortunes, of course. The Seventh Sense feels the way in which power has shifted, is shifting, from public to private in this way, masked by coded language, hardware design, corporate structure and the demands for speed and safety we all agree on. Huge shifts in power will occur before we are even aware if we don't have a sensibility to feel them out before they occur. Decisions about code, search, machine intelligence, DNA alteration rules in labs – all occurring in black box machines or corporations or governments. Several years ago it occurred to me in an unsettling flash: "The most important things that will happen in my life will happen in secret."

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[173] **"Democracy":** Arthur M. Schlesinger, Jr., *The Vital Center: The Politics of Freedom* (Boston: Houghton Mifflin, 1949), 246

[174] **"Our constitution":** Thucydides, *A History of the Peloponnesian War,* (Oxford: Oxford University Clarendon Press, 1881),119

I'm not sure I've quite recovered from this insight yet.

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This same unnerving worry has troubled many people who think about connected machines, and for some time. It's not only those among us who are pointlessly nostalgic for a different era of devices, when the default setting of our instincts was *open*, who now worry about this strange tension between function and opacity. And remember – I'm running through all this here so we can all understand how to really grab and use this new source of power in the service of what we desire, and to protect the things we care about. But: What are we to make of systems that work better when they are obscured from us? That we could never understand even if we could see inside? Documents such as *The Critical Engineering Manifesto*, pulled together by a collection of uneasy designers and engineers, reflect anxieties that stir even inside the hearts of many in the New Caste. "The Critical Engineer considers engineering to be the most transformative language of our time," the Manifesto begins. "Each work of engineering engineers its user, proportional to that user's dependency on it." That is Conway's or Wittfogel's unsettling truth. The technical layout of a social network, a medical diagnostic tool or a financial market affects how we or our markets or our government (or our enemies) behave. We are, in a sense, being engineered by the damn opaque systems we are using.

In 1965 the MIT computer scientist Joseph Weizenbaum found himself, somewhat unexpectedly, considering this same problem.[175] Weizenbaum had written a primitive computer program to perform what is now known as natural language processing, essentially a bit of code designed to translate what a user tells a computer into clear instructions. This is the work that converts your request to a machine for weather updates into a query that can be turned into an answer. Teaching a computer to answer a question such as "it is it raining?" demands layers of logic and calculation.

In 1965, long before our era of simply talking to our phones or computers, Weizenbaum's program was a revolutionary breakthrough. So after developing his algorithms, he wanted to find an intuitive demonstration. He decided to build a system that could, in a very limited sense, converse. The computer would take typed input from a user and then, based on what it understood, ask a question back to continue the conversation. The approach was borrowed from the psychological theories of Carl Rogers, an American therapist who believed the best way to talk to patients was with open ended, careful questions. Weizenbaum developed two programs. The first was called DOCTOR, a script that determined what the computer might say. The natural language processor responsible for carrying on the human side of the conversation he called ELIZA, after the heroine from Pygmalion, a poor cockney girl who is trained by a phonetics professor to pass as a duchess.

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[175] **In 1965:** Joseph Weizenbaum, *Computer Power and Human Reason*, W.H. Freeman and Company, 1976 p. 7

Here is a discussion between ELIZA and a user that Weizenbaum recorded in 1965:

Patient: "Men are all alike."

ELIZA: "IN WHAT WAY?"

Patient: "They're always bugging us about something or other."

ELIZA: "CAN YOU THINK OF A SPECIFIC EXAMPLE?"

Patient: "Well, my boyfriend made me come here."

ELIZA: "YOUR BOYFRIEND MADE YOU COME HERE?"

Patient: "He says I am depressed most of the time."

ELIZA: "I AM SORRY TO HEAR YOU ARE DEPRESSED."

Patient: "It's true, I'm depressed most of the time."

ELIZA: "DO YOU THINK COMING HERE WILL HELP YOU TO NOT BE UNHAPPY?"

Patient: "I need some help, that much seems certain."

Weizenbaum's program quickly became famous around MIT. (The joke was that it was a better conversationalist than most of the awkward shoegazers studying at the Cambridge campus.) ELIZA gave users a chance to have a taste of a machine with something like a mind of its own. The program spread to other campuses, to different research institutions, and with every step of its success, Weizenbaum found himself more distressed. He summarized his worries in his 1972 masterpiece *Computer Science and Human Reason*. What troubled him was not ELIZA, but her users, the humans. Even when they were professional psychologists, many of them quickly considered it reasonable to think that one day the work of diagnosis and counseling might be turned over to machines. This felt like a natural next step in the ceaseless progress they were used to in their lives. Better refrigerators, stronger seat belts, faster jet planes, more plastic – why not a computer doing therapy? It sounded kind of wonderful. "A number of practicing psychiatrists seriously believed the DOCTOR computer program could grow into a nearly completely automatic form of therapy," Weizenbaum wrote. "I had thought it essential, as a prerequisite to the very possibility that one person might help another cope with his emotional problems, that the helper himself participate in the other's experience." To use a machine for such a task? He was horrified. Weizenbaum knew the empathy ELIZA was exuding was faked. *It was just code*. "Science," he concluded, "has been gradually converted into a slow-acting poison."

"Would you mind leaving the room," Weizenbaum's secretary said to him once, lost in a particularly personal discussion with ELIZA. "The reaction," he wrote, "showed me more clearly than anything I had seen hitherto the enormously exaggerated attributions even a well-educated audience is capable of making, even strives to make, to a technology it does not understand." This was black boxing at its worst: "I have no idea how this thing works. And it's wonderful!"

What makes the New Caste so particularly powerful is that their essential work is to build and operate the cores that control these systems. And the more people they lure onto them, the more powerful the platforms – and the people who run them – become. "The computer programmer," Weizenbaum wrote, summing up his lessons from ELIZA, "is a creator of universes for which he alone is the lawgiver." Each of these cores represents a fusion of power and politics and technology like nothing the world has ever seen. They are assembled mostly from scratch, they represent the concentration of billions of connections, and their direction is determined by technological and market factors as much as by any democratic twitch.

The strategic power of societies that train the best of the New Caste is probably self-evident by now. To educate and deploy masses of people capable of such transcendent design genius will mark a difference, an electric gating line between the nations that succeed and those that fail. But such training brings a real tension, if this group is allowed to really rip away at their work. What won't they attack? Control over the protocols that answer questions, move money, protect data, analyze your DNA – it's hard to think of any single locus of power that will ever be greater than the tight, gravitationally inevitable platforms emerging around us now. These essential webs are filled, as we've seen, with complex bugs and errors and loopholes. They depend on design decisions whose implications resonate for decades – both inside the black boxes and the external world that vibrates to their quiet demands. "If builders built buildings the same way programmers write programs," one famous coding lemma runs, "then the first woodpecker who came along would destroy civilization." Who would know if rot is spreading in these systems? Who would stop it? Recall Paul Virilo's line that trains produced train accidents, planes produced airplane accidents. So: Black Boxes?

As much as the work of the New Caste looks tactical in nature – what protocols to use, how to engineer networks or design machine boards – the reality is that most of what they do would be blind without a strategic urge. Behind even the smallest advance, whether it is fingerprint recognition on your phone or some new auto-translation app, a set of careful, deterministic values and calculations linger. One feature that defines the New Caste is unadulterated, unquestioned faith in the continued network revolution, and that the values that underlie the best programs may be the values that should gird the world that depends on that same code. The danger here is clear enough. "Respect, understanding and love," Weizenbaum wrote as he considered ELIZA's effects, "are not technical problems."

The biggest of the platforms controlled by the New Caste herd together, remember, billions of people, bind them with ever thickening cords. The revealing tics of every movement in the virtual and every step or drive in the real world are marked down, remembered and scored. To operate the strategic levers of such a force is, in all reality, no less significant than leading a nation. The distinction between a CEO of a major connected firm and a head of state lies less in the depth and efficacy of their influence than in the questions of how they got such power, and how they might use it. The New Caste has an admirable conviction near to faith that their products are truly universal. They are absolute technological determinists. Watching their services and influence expand often has that strange aura of the irresistible force taking on an immovable object. They believe that their black boxes will bulldoze concerns of politics or history. And soon.

Historical ambition of this scale, the sort that touches really countless lives, has always blended a commercial and technical mastery -- the moves of the East India Company turned as much on better ship design, maps and navigation as on imperial objectives. But the aim of the New Caste is the same as it was for those three older castes – the merchants, soldiers and sages: To put the tools they've mastered and built in the service of still more dominance. The commercial calculations of the most powerful figures of the New Caste carry a sense of seeing many moves ahead, a very real kind of chess. Their billion dollar acquisitions, investment in moon-shot R&D ideas, the hundred million dollar payouts for great engineers – all of these mark the astonishing scale of what they have in mind: To have and control ever more essential cores of power. Are they seduced by having a billion users? Sure, but not because of the billion users, but rather because of the seductive allure of the black box, of what it means to control such a central point of connection.

4.

I remember sitting with a member of the New Caste the week the first batch of mimeographed and laser-scanned Snowden papers were released, as we both discovered that *everyone* we knew was devouring the documents. Like a novel. People were texting one another – "Have you seen this?!" – and you couldn't get through a dinner without a debate over the technical merits of what was on display. The Snowden files were fascinating to the New Caste in a way few others might understand, in the way a room of ballplayers might examine Ted Williams's swing mechanics. Let me try to explain it this way: When I was younger, people called our generation – those of us born between 1965 and 1980 more or less – a generation of slackers. Generation X. Generation Nothing. There was an argument to be had about the Baby Boomers. Had they been the most destructive, selfish generation in American history? A reaction against the selflessness of their parents? Retired to leave the rest of us to pay their future medical bills and oggle their underfunded pensions, to cope with the manipulated political system they'd sued into existence. Or had they left a legacy of tolerance, an echo of 1968's optimisitic energy, a firming of American confidence. But, anyhow, Generation X? By comparison irrelevant: A collection of sad, passive slackers.

But the great Internet companies were largely built by Generation X. The foundational experience of 1989 – the fall of the Berlin Wall – bred optimism. It created, in fact, the possibility for a new exploration. When we were told "Be generous in what you accept," this seemed reasonable and, eventually, lucrative. The logic and power of networks became apparent by itself, the moment we began connecting the world. So linkage in trade and finance and friendship was pressed out into a new era of globalization, pushed as much by the smashing, enthusiastic removal of so many historical limits as it was by the technology itself. Yes WiFi and TCP/IP and other advances made wiring the world possible, but I wonder if they would have developed so quickly if the context for using them hadn't provided a feedback loop of such quick profit and reward and, frankly, amazement. So, in this fashion, we laid the groundwork for a world of billion-plus user platforms. For a new concept of power.

But the Snowden papers were a shock. We knew him, in a sense. His mannerisms and thinking and technical instincts harmonized with our own. It was as if the NSA had enrolled most of the digitally visible world into a twisted panopticon of a social network, one where your "membership" began the moment one of your data packets was sniffed or chased along fiber optic lines. Here was a secret three billion-user platform, in a sense, that had enmeshed, without their knowledge or permission, a tremendous chunk of humanity. *People of interest*. The one or two or three billion people swept into systems like the NSA's Aurora fell victim to the powerful leverage of scaled systems: The more people monitored by the NSA, the more leads to follow, which meant still more people needed to be followed and knitted unwittingly into the web.

No one in my generation who had been around tech for long was naïve. We knew that like soldiers coming back from a war there were things done on the network – the spreading of danger, of inequality, of pollution – that would have to be paid for in balance by the benefits the system promised to bring. The immensity of what had been built already in networks was clear enough; the even greater power yet to come as trillions of more connections piled together was implicit, obvious even. The perverse, sneaky side of this growth was known to anyone who'd spent time working a connected machine. But that people of our generation could on the one hand listen to "Karma Police" and on the other enact the sick *OK Computer* logic of surveillance, even name a British GCHQ monitoring program after the Radiohead song? The aim: Provide "either (a) a web browsing profile for every visible user on the Internet, or (b) a user profile for every visible website on the Internet."[177] We'd not honestly thought the end of this would be a need to so deeply question or defend freedom or liberty.

The whole idea of connectivity had begun with liberty, after all. The Fall of the Wall. We'd not known or expected to lose it through the very systems we'd constructed in the open space a 20-year peace had presented. So: We'd been naïve after all. We'd been united in a tacit claim that there was nothing bad about connectivity. We believed it for the most part and convinced others. *We didn't mean it that way*, I felt the New Caste readers of the Snowden Papers were saying to each other, paging through the sick, ineffably banal logic of those NSA Power Point presentations. They were brochures for totalitarianism. If you have not read them, it is worth looking them over. They have, you'll see, all the anodyne banality of insurance company pitches, even if the dull language was expressing something vivid, nothing less than the potential murder of some very basic rights. We were reading and discussing and debating the documents so avidly because, it seems to me, each of us had a kind of horror of what we might have done.

Here was a massive technological and insidious web, a totalizing virtual machine of collection and analysis and instant observation and reaction. It relied, for its safe operation, on the humans in the loop of that sensing and seeing and machine thinking. And what was it, exactly, that the humans had appeared to do in the face of such urgent responsibility? Almost like that silly secretary chatting with the ELIZA machine, they had suspended their sense of warm humanity in the face of the magical charm of electrical promise. They had let the machine run. The whole system had been built and operated by members of the New Caste who were, in turn, beguiled and charmed out of a sense of certain essential limits as they stared at the beautiful face of machine power.

Looking back on his formative years, before Europe was ground up in the First World War, the powerfully brilliant and sensitive economist John Maynard Keynes bitterly recalled the iron certainty of his set of friends and their confident, diffident arrogance: "We were not aware that civilization was a thin and precarious crust erected by the personality and the will of a very few, and only maintained by rules and conventions skillfully put across and guilefuly preserved. We had no respect for traditional wisdom or the restaints of custom."[178] It was the war, then the depression, then a war which taught them this expensive lesson. What is fracturing around us now, with our own willful and diffident support, is that very thin and precarious crust, cracked and assembled as Keynes said by "the will of a very few". What if those very few are the New Caste?

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[177] **The aim:** GHCQ "Pullthrough Steering Group Meeting #16" available from theintercept.com

[178] **"We were not aware":** John Maynard Keynes, "My Early Beliefs" in *Two Memoirs: Dr. Melchior, a Defeated Enemy, and My Early Beliefs* (New York: A.M. Kelley, 1949) 99

The essence of the Seventh Sense will be not merely to be beguiled by our technology, by the way it smashes old systems, not to ask "Could you please leave the room while I use bend these electrons to even more omnipotent control," but rather – in the same instant as the networks snaps into its full power– to grasp the full nature of the connected age. To see how it might be used to further, not erode, the things we care most about. To ensure that if we are not among the *very few*, at least we can guarantee that their will bends towards justice. We will see, in a moment, just what that means in practice. How our best technology and our most avid hopes for what a technological, connected future could look like might just be yoked together. But before we can do that, there is one final question we need to answer about the networks all around us now: What, in the end, are they really for?

Chapter Eight:
"MapReduce": The Compression of Space and Time

In which we learn what networks are really, rather wonderfully, meant for.

1.

Starting in the springtime of 1997, the American scientist and inventor Danny Hillis began what has since become an every-few-months sort of ritual. He packed up from his home in Encino, a short drive over the Hollywood Hills from Los Angeles, and headed off for rural Texas for a few days that would largely defined by rock and dynamite. Hillis, who was born in 1956, has spent most of his life working at the electron level of the world, crafting some of the most significant computer processing systems of our age. So the sort of paleolithinc earth moving he was heading off to manage in Texas was a departure from his usual scale. His aim was to work on blasting and then refining a space in an isolated mountainside for the construction of a towering clock that he had designed, one intended to run for 10,000 years. That ten-millennia span was not accidentally chosen. Humans, when Hillis began his work on the clock, had been around about that long already. We were, as he pictured it, at a midpoint on that 20,000 year stretch of time. Hillis and the group of tinkerers, thinkers, and engineers who had backed and designed the clock – people such as Amazon's Jeff Bezos, spreadsheet inventor Mitch Kapor or investor Esther Dyson – were planning on a project that would stretch as close to eternity as they felt reasonable. "The Clock of the Long Now" they called it. I remember pulling into Danny's driveway in Encino one afternoon as he prepared to depart for Texas and being struck by the contrast between the lovely, innofensive suburban blandness of Southern California and the tools he was taking with him to make an assault not merely on a mountain, but on a whole conception of time.

I had met Hillis in an unusual fashion. I'd been asked to chair a committee that would award a million dollars to a figure who had made an essential contribution in the world of technology. The directors of the foundation behind the then-new prize had been, from the start, slyly dropping big names – Bill Gates! Steve Jobs! They hoped such a laureate would cast a bit of glamour on the first year of their award for "Contributions to Man's Present Condition." But when our committee sat down to talk it over, we knew that the boldfaced names didn't want or need a prize. They certainly didn't need a million dollars. As we considered people we all knew who'd made fundamental, essential contributions but had not been as boldfaced as they might have been, Danny Hillis's name came up immediately.

Hillis had developed a revolutionary "massively parallel" computer in the 1980s. The machine had helped create an entire discipline of high-speed computing by tying together tens of thousands of processors to tackle a problem at once. Traditional computers worked problems the way you or I might, step by step. Hillis' design was the equivalent of millions of minds, all moving at once. Coordinated, connected and awesomely fast. In the years since, he'd played a key role in a dozen other breakthroughs, from designing artificial intelligences to fine-tuning classified military aircraft systems that depended on mathematics for their stability. When you wander into a deep part of Google's technical database systems, you're touching his work. When you talk to your phone, the interface bubbles with some of his patents. How did Baran's 1960s idea of a survivable, packet-based system at ARPAnet become the Internet in the 1970s and 80s? Danny was part of a cluster of dirty-fingernail engineers – along with engineers such as Vint Cerf and Jon Postel – who'd done the work to make it possible. His centrality in that project was memorialized in a famous speech he once delivered in which he described having one of the very first email addresses in history – and then whipped out a sheaf of bound pages that represented the entire Internet address list at the time. It ran about 50 pages. To the extent there were membership cards in the New Caste, Danny's would have had a very low number. It was an easy decision for our prize committee. No Bill Gates. No Steve Jobs. So, here's how I met Danny Hillis: I called to tell him he had won a million dollars. (I recommend this as a way to start a friendship.)

Hillis had been a tinkerer since he was a child and never seemed to have lost the pleasure of a wild intermingling of joy and practice. You couldn't tell with him where passion ended and work started. He was so technically adept that he could inject even the coldest digital projects with a bit of hot emotion, like Bernini breathing life into a block of carved marble with one, "just so" grace note of his chisel. One of Hillis's most famous projects, for instance, was a 15-foot high tic-tac-toe playing tinkertoy robot he'd built when he was 20 years old, in his second year as an undergraduate at MIT in 1975. Made from 10,000 wooden spindles and poles, it was an early attempt of his to show how machines, even simple ones, might seduce us with both brains and looks. The effect of a giant tinkertoy pile sitting there at The Massachusets Institute of Technology had to make you giggle, even as your mind boggled at the fact that this heap of sticks, strings and dials was beating you again and again at a child's game. Hillis was an artist as much as an inventor – one reason he'd not become Bill Gates or Steve Jobs. (And why Gates and Jobs maintained a consistent, admiring respect for him.) He'd once spent a decade at Disney designing rides or thinking up new dreams as a kind of real-world mayor of Tomorrowland. He liked to joke that he knew he was at the right place when, on his first day, he asked where he might find a parachute harness for an experiment and heard, in response, "What size?"

Hillis was an avid reader, and he has the habit to think of his bleeding-edge work in the context of long historical gulps. Conversations with him often tie back to Paleocene era biology or some other deep root. That long-term view, married to his unmatched hands-on feel for complicated systems, made him the ideal designer for the clock, a machine intended to last millennia. The problems associated with such an undertaking were, honestly, as unreal as you might expect. How to power the clock? (Hand winding, the better to ensure it was not forgotten.) How to protect it? (Put in the middle of nowhere.) Did you need to plan for global climate change? (Yes. The design was adjusted to accommodate shifts in the earth's spin when the planet's icecaps melt off.) Do you write a users' manual for people 10,000 years from now?

(Yes.) Do you write it in English? (To be determined!) Working with composer Brian Eno on the sound of the clock chime, and with a team of geologists and physicists, Hillis had made the clock into a natural extension of his tinkertoy computer, a device that both served a purpose and sent a message. If there was an emotion it conveyed, a feeling that it tickled in the way Bernini's *Apollo and Daphne* might inspire terror or joy or faith, it was meant to be awe.

Stewart Brand, one of the supporters of the clock and an early member of the New Caste too, would tell you that the idea for the clock had emerged from a desire to emphasize, to *physicalize* in a way no one could forget, the importance of longer-term thinking. We'd all arrived now, Brand and the other clock masters worried, at a moment in history when no one had a view that extended much past their own lives – or sometimes past the next election, or year, or the next financial quarter. Our modern "on to the next thing" economics and politics were eroding every slow, patient instinct. "Civilization is revving itself into a pathetically short attention span," one manifesto for the clock began. "What we propose is both a mechanism and a myth."[179] With its steady 10,000 year ticking, the Clock of the Long Now was meant to make us think in longer jumps. The human winding mechanism, for instance: Generations of clock-winders had to share in the work, and they would be connected in a long thread over the 10,000 years. A sacred priesthood of time. Moving slowly. As I spent time thinking, dreaming about the clock, I found myself too craving the solidity and patient isolation it promised. Who among us these days doesn't want a break from the instant nowness of our age?

Yet, the more I understood the clock, the more I realized something else was at work. Stop for a moment to consider who was backing and building the device. It was a cluster of people who had, as a common link, the fact that they had their hands honestly *sunk* into the guts of the Internet. Hillis, after all, had been waving more than that slim book of email addresses when he talked about the early days of the Internet. He was waving the credentials of a man who had been living in the virtual cyber neighborhood of Web connections from its very first days. He was as close to a native of the connected, fiber optic, light-speed world as you could find.

All the names supporting the clock smelled similarly of burning electrons: Jeff Bezos had built Amazon into a high-speed marketplace whose backbone was the Web itself. Another backer, Mitch Kapor, had cracked apart several centuries of slow accounting habits when he created Lotus 1-2-3, the first successful computer spreadsheet program in 1983, software that permitted you to see and change your whole business one keystroke at a time. Kapor's software helped move finance from quarter-by-quarter calculations to a really instant-by-instant sort of business – more or less the opposite of the "long time frame" the clock team was aiming to preserve. Esther Dyson was one of the earliest, best investors in network companies. This was a collection of men and women unified by a genius for connected change, sure, but also by a desire for ever faster clock speeds, ever speedier delivery, ever faster processing. They had lived this. Enabled it. Profited from it. If there was ever a group you might hope to take aside, pull into a quiet room and ask gently *What are the really networks for, anyway?* this would be it.

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[179] **"Civilization is revving itself":** Stewart Brand, *The Clock of the Long Now: Time and Responsibility*. (New York: Basic Books, 1999) 2

The act of keeping time, of marking it, is embedded in the nature of any age. Our lives are, after all, dictated by timetables: School schedules, the seasons, rush hour, the burning candle of birth-love-marriage-death. Time, in the days before industry, was measured by nature's schedule. How long it took a crop to mature. The solstices. A beehive filling with honey. It was marked by moving tides and shifting seasons, and it demanded a slowness, a personal presence on the shores, in the oceans, atop the fields over generations. "Summer afternoon," the novelist Henry James remarked in a précis of a slower age he felt passing away in 1895. "To me those have always been the two most beautiful words in the English language."[180]

Then, in the industrial revolution, time became money. Electric lights, for instance, undid the restful distinction between night and day – and made 24-hour life and manufacturing and economics possible and then, of course, inevitable. Movement from countryside to city established a really new sense of what the German critic Georg Simmel, writing in 1903, called *tempo*. "With each crossing of the street, with the tempo and multiplicity of economic, occupational and social life, the city sets up a deep contrast with small town and rural life," he explained. "The technique of metropolitan life is unimaginable without the most punctual integration of all activities and mutual relations into a stable and impersonal time schedule."[181] Punch cards. Bus schedules. The forty hour work week. Our education, our manufacturing, our markets and our lives all began to run on timetables. They had to, or the whole project of industry would collapse. "Summer Afternoon" became a time to work. Simmel worried, for instance, over the diffusion of pocket watches. To carry one was like looking at a constantly draining bank account.

This sense of humans reduced to cogs – churned, run, disposed of on a schedule not their own – unnerved the residents of that first mechanical age. Cities had been the very first sorts of tight-packed networks; *industrial* cities ratcheted this further still. They succeeded and failed by the degree to which they geared themselves and their citizens to machine speed. When the Austrian novelist Robert Musil began *The Man Without Qualities*, his classic story of the era, with the flattening of a Viennese citizen by a speeding delivery truck, he meant to point out how urban speed and urban life (and urban death) had become inseparable. And also the mismatch between the weak breaks of the age and it's acceleration. The book is alive with that pre-accident slipping sensation you may have had: You are pressing hard on the brakes of the car; you are going to hit something anyhow. "Cities can be recognized by their pace just as people can by their walk," Musil wrote in a line that any modern New Yorker or

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[180] **"Summer afternoon":** Edith Wharton, *A Backwards Glance,* (New York: D. Appleton-Century, 1934) See chapter 10 for her tale of an afternoon with James.
[181] **"With each crossing":** Georg Simmel, "The Metropolis and Mental Life" (1903) in Gary Bridge and Sophie Watson, eds. The Blackwell City Reader. Oxford and Malden, MA: Wiley-Blackwell, 2002, p. 11

Parisian would endorse.[182] "A man returning after years of absence would have known, with his eyes shut, that he was in that ancient capital and imperial city, Vienna." To really get a feel for that age, watch just a few frames of Russian director Dizga Vertov's jittery 1929 black and white film *Man with a Movie Camera*[183]. Each moment of the movie is alive with the tension of a new, rushing and industrial age. You won't be surprised Vertov's list of requirements as he prepared to start filming began: "1. A rapid means of transportation." His aim was to immortalize urban speed on the new medium film; he knew he needed to be fast.[184]

To know a city by it's pace. Musil was touching something deep here, an instinct that beats in each of us and runs from this fact: The speed of an event affects how we perceive it. The difference between what you will notice when walking up a hill – chirping bugs, tiny rocks, changes in color and gradient – and driving up that hill is so complete as to be almost different experiences entirely.[185] When the whole world tumbles upon us at fiber-optic speed, when invasions and revelations and accidents all spread at the rate of WiFi or cell phone radiation, our sense of time blurs. You have to wonder what Simmel would have made of a smart phone. "It is not merely that the medium is the message, but the velocity of the medium," Paul Virlio observed once in one of his many studies on speed and mind.[186]

Life in our connected age is both instant and always on, what Simmel might have called "the technique of network life." This demolishes an older, easier sense of pace. Computers were once switched on at 9 and off at 5 – just like their human masters. But digital activity is constant now. The networks are paying attention all the time. They have to. Our machines – tractors and trains and cars – used to echo our pace of life. Now we echo theirs. The machines, the New Caste, the black boxes – they tick along constantly, ever faster. We rely on them, as we've seen, for our safety. We want them to be fast. To be instant. But what is this doing to us? Is completely unhooking us from any sense of time really a good idea?

It was certainly true, as Brand insisted, that the Clock of the Long Now was meant as a reminder, as a kind of constant totem to the fact that we're all just a small tick on the endless long continuum. We do think in too short a time frame. But the clock also, I began to suspect as I considered it, had another role. Those 10,000 years of marked time were an attempt to scratch an itch bothering these pioneers of cyberspace. It might even have been a sort of guilty sensation. After all, there was something that they had demolished in their ceaseless fast connecting of the world – maybe accidentally, but anyhow it could never be put back to where it was. If the great industrial titans before them had, over several hundred years, vanquished distance, lacing the world with trading networks, the men and women behind the clock were fracturing something else, something that for all of human history had seemed the only reliable, safe, sad constant of our condition: Time. For most of history, time and space were seen as facts, immutable forces that could not be overcome or adjusted or fought. Time particularly. The quintessential, tragically non-negotiable condition of life. The backers of the clock were, in their "day jobs", in the business of overcoming, adjusting, fighting and even destroying an older sense of time. What might once have taken years, they were committed to making happen in an instant.

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[182] "**Cities can be recognized"**: Robert Musil, *The Man Without Qualities* Vintage (1996) 3

[183] **To really get a feel:** Vertov's movie is shot in Moscow, Kiev, Odessa and Krakow. In 2003 The Cinematic Orchestra produced a modern soundtrack to accompany it.

[184] **"A rapid means":** Jonathan Dawson, "Dziga Vertov" *Great Directors* March 2003 Issue 25

[185] Ajahn Brahm of the Buddhist Society of Western Australia tells a wonderful story in his Dharma talks about a day in which he decided not to be driven up the road to his monastery in Perth, but instead walked the road. He was flooded by the sensations of nature, all invisible from the inside of a car. One way to change your perspective, he means, is to change the speed at which you are moving through life. See the Buddhist Society of Western Australia website for a catalog of his talks.

[186] **"It is not merely that the medium":** Paul Virilio, *Information Bomb* trans. Chris Turner (London: Verso, 2000), 141

The Long Now project, then, was like one of those carefully isolated arctic freezers, where samples of essential grains and DNA from Beethoven's hair and Einstein's brain are sunk and iced against the godforbid day in which our basic feedstock or a chunk of humanity has been wiped out by accident or disaster. Blasted into a mountain hole, designed to last thousands of years, the clock is a repository for time itself. It is a defensive museum, built against the moment when instant networks finally devour the off switch and kill an older, essential feeling of time. The clock-makers knew, I think, that they had helped to demolish a particular sense of pace with their fast, instant networks. They wanted, with the knowledgeable keening of the guilty, a new device, one carefully gated away from the very revolution they were encouraging with their business and technical obsessions. This hunger for speed had built their fortunes. Their revolution (and its IPOs) had paid for the clock, frankly. And the hope for "instant world" had inspired their dreams long before deep, fast connections were possible. Bezos's first name for Amazon, *Cadabara*, captured just this sense of waving wands and the eye-blink "Now you don't see it, now you do!" appearance of just what you want or need. Murdering time. You could ask: *What are the really networks for anyway?* Would they feel guilty when they confessed?

2.

Danny Hillis's father was an epidemiologist. His mother was a bio-statistician. And his childhood was a blur of infection-led family migrations. "Anywhere in the world there was an epidemic, we would go," he recalled. As the family bounced from Dehli to Cairo to Dakha to Nairobi, racing diseases one after another, Danny developed a vivid, energetic autodidactisism. He would collect knowledge from his parents, from the streets around him, his new friends, anywhere. In a library in Calcutta, for instance, he once found a copy of George Boole's 1854 book "An Investigation Into the Laws of Thought". Boole invented symbolic logic on those pages and though his instincts were grounded in an age of steam and machines, his vision still echoes in modern computer design. "Language," Boole wrote, "is an instrument of human reason, and not merely a medium for the expression of thought."[187]

Hillis has a magnetic intellectual charisma, as you might have guessed by now. An afternoon with him resembles nothing so much as a lingering mental theme park: Roller coasters of big ideas (a 10,000 year clock!) mixed with smaller sugary treats (how to design a better fencepost). No wonder he fit in so well at Disney. Critics accused Steve Jobs of having a "reality distortion field", in which the Apple founder's charisma bludgeoned the boundaries of the practical. Hillis, by contrast, has a sort of "reality enhancement field" in which much of the world as seen through his eyes or heard in his light-hearted voice is sharper, filled with possibility.

From an early age Hillis had been interested in the dream of a thinking robot. Maybe it was that the constant uprooting of his childhood left him with a giddy sense that it was easier to *assemble your own friends* than to try to make them new at each stop. But somehow this led him to the idea of an artificial brain, which was Danny's main idea when he arrived at MIT in the fall of 1972. The tinker-toy tic-tac-toe computer he built was a nod to this hope, but it's jerry-rig aesthetic masked deeper ambitions. "Someday, perhaps soon, we will build a machine that will be able to perform the functions of a human mind," Hillis wrote at the start of his PhD thesis a few years later. "A thinking machine."[188]

What Hillis and others like his mentor Marvin Minsky, realized was that the human brain works differently than machine logic. Life, after all, is not a series of linear math problems. (Much as we might wish it was at times.) You look outside. It occurs to you to say to your wife, "What a lovely day." This is not a result of some "a then b then c" calculation, but rather the product of thousands of simultaneous inputs and twitches dancing through the space of your consciousness. If you were to process that same thought in a linear fashion, it might look like this: First, look at the sky, examine the cloud-to-blue ratio, check for too much wind, sense the temperature, open mouth. Your wife would be out the door before you'd even begun to speak. The ability to operate on many different pieces of data all at once is one of the most striking, enviable features of the human mind. But of course, you've probably, recognized: That is fundamentally a *network* problem. How do you act instantly, everywhere? Connection. So it was that, a dozen years after his tic-tac-toe machine, Hillis began work on a device designed to think super fast. Faster than any computer ever had. He called it The Connection Machine. "The ability to configure the topology of the machine to match the topology of the problem will turn out to be one of the most important features of the Connection Machine," he wrote. Adding, in case the academic panel at MIT missed the point: "(That is why it is called the Connection Machine.)"[189]

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[187] **"Language":** George Boole, *An Investigation of the Laws of Thought: On Which Are Founded the Mathematical Theories of Logic and Probabilities.* (New York, N.Y.: Dover Publications, 1951)

[188] **"Someday":** William Daniel Hillis, *The Connection Machine*, PhD. Thesis Submission, MIT (1985) p. 2

Hillis's ambition to build this device boiled in him while he was at MIT, and it finally outstripped what MIT could support, so he gathered a group of students and started a small company. The Thinking Machines Corporation, blessed by some combination of Hillis's charisma and the fantastic promise of the project, became a magnetic field for talent, ideas and money. In the early days of the firm, for instance, the hunt for investors led Danny to the luxurious New York City apartment of William Paley, the founder of CBS. Hillis lived then in a ramshackle house close to campus at MIT. He drove a surplus fire truck to work most days.[190] Faced with the urbane, powerful 81-year old founder of the largest radio and TV network in America, Danny jumped right into a passionate introduction of *his* ideas about connection and networks. Paley, cooly: "I didn't understand a word you said." Then: A check for $5 million.

Or there was the time that Hillis asked Nobel-prize winning physicist Richard Feynman to tip him off about any smart scientists Thinking Machines might hire. Feynman, pushing 60, volunteered himself and spent his summer vacations for the next ten years with Hillis and his team.[191] When it came time to test the first Connection Machine, it was Feynman's data that revealed how well the black box was doing its job. The architecture they had designed cranked through what would have been a month's worth of complex chromodynamics problems in hours. As the machine got better, these already fast processing times improved by another factor of 1,000. Such a machine, for scientists who were desperate for computed answers, was like adding years to their life. If they could solve a problem in a week instead of years? The whole texture of their careers would be altered.

"At times," one fellow computer developer remarked, "the Connection Machine seems so different from current computers that it seems more akin to science fiction than high technology."[192] Thinking Machines Corporation sold Danny's computers to Lockheed to model stealth fighters. Chevron used one to model oil fields. The US government bought several to help to predict the weather. Puzzles long resistant to mere power melted in the face of parallel consideration. Nothing was more exciting about Hillis's machines than this intimiate, unprecedented link between intelligence and speed. If you have twice as many processors as I do, you can perhaps crack a puzzle of genomics or cryptography a year faster. But say you have figured out how to have 275,000 machines linked together and I have 1,000? You can solve a problem *eight years* sooner[193]. Between 2007 and 2015 the number of connections a Hillis-style neural computer could handle grew from 1 million to 100 billion. This speed did produce things very like science fiction: Accurate voice recognition. Real-time genetics. And it also began to mark out, clearly, the powerful network territory where our future will be decided.

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[189] **Adding**: Hillis thesis, p. 19

[190] **He drove**: Po Bronson, "The Long Now: Time Traveling with Danny Hillis", *Wired* (May, 1998)

[191] **Feynman**: W. Daniel Hillis, "Richard Feynman and the Connection Machine" *Physics Today* February 1989, p. 78

[192] **"At times"**: Michael J. Black "Book Reviews: The Connection Machine", AI Magazine Volume 7 Number 3 (1986) p 169

3.

Of all the things that mark a change between our modern lives and the days of those who came before us, few are as sensationally obvious as the sheer acceleration of life, the reduction of delay and the emerging *instantness* of experience. Faster. What is going on inside the machines, as Mel Conway's old law would have told us, is happening too on the surface of our lives. A feeling of breathlessness in the face of speed isn't new, of course. When Anna Karenina folds herself under an oncoming train at the end of Tolstoy's novel, for instance, her suicide is as much metaphor as personal tragedy, a comment on the disorienting steam, engine, and rail pace of modernity. Speed kills, old habits and ideas particularly. Between 1840 and 1940 travel times between Anna's St. Petersburg and Vronsky's Moscow shrunk by 10 minutes every year on average, loosing deep cracks in Russian economics and politics, tearing apart Anna's slow-moving world of glittering balls and hereditary estates with the fast force of industry, modernity and then the awful pliers of communism. Tolstoy's own death in 1910 held a bit of this acute tension between old and new velocities: At 82, hoping to live out his final days in the peace of a small hut, he left his family for the rural Russian town of Sharmardino. By train. He died at a station on the way, stopped quite literally, like an absurd figure in a Gogol novel, as he was enacting the tragedy of trying to use the modern to get to the past.

At the same time in the late 19th Century, the American rail system was working its own transformation, but with almost no ambivalence. America was using the modern to get to the future – as fast as possible. This was a decisive difference in temperament. "The American frontier," Frederick Jackson Turner wrote in his famous 1894 essay about borders and American life, "is sharply distinguished from the European frontier—a fortified boundary line running through dense populations."[195] American rails and roads (and trade) encountered no substantial fortifications. They ran nearly unchecked into the wilderness. The only apparent limit to expansion, that generation thought, was technology itself. The trains had, from the start, an unusual purchase in American life. During the three decades after 1840, the refinement of small but important details – faster train engines, stiffer carriage design, tracks that were straighter, an ability to move and re-load boxcars at night, better time-table management – eased America into the steam engine age at faster a pace than any nation. “The most significant thing about the American frontier,” Turner explained, “is that it lies at the hither edge of free land.”

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[193] **You can solve:** Adam Beberg lecture "Distributed Systems: Computation with a million friends", speech at *Stanford University Computer Systems Colloquium* (April 30, 2008) available online

[195] **"The American frontier":** Frederick Jackson Turner, "The Significance of the Frontier in American History", *The Annual Report of the American Historical Association, 1894*, pp. 119-227

This brisk acceleration of rail transit revealed an axiom of speed that matters to us still: The faster your speed, the less distance matters. Accelerate from five to fifty to five hundred miles an hour and the mileage becomes less significant with each notch on the speedometer. It all takes the same amount of time. Marx called the process “the annihilation of space by time”. He was right. Speed kills distance. The simple algebra linking increased speed and reduced distance had been apparent already in the shift from rowed galleys to sailing ships, but the age of industrial transport by rail or air meant that rapid changes, changes that affected the very quality of movement, took place within the time frame of a single lifetime. The acceleration from horseback to train to plane happened over a period of 150 years or so. Each new acceleration *diminished* the impact of distance.

There’s a phrase for this process – “Space-Time Compression” – first identified by the American sociologist Donald Janelle in 1965[196]. Janelle saw that the technologies of transportation, trains and planes and boats, and all the little innovations that made them move ever-faster, were disrupting old spatial habits. They helped move goods more quickly, sure, but in the process they were also making the old, geographic maps less useful. When you could fly over a mountain, its importance diminished. In a wagon train you might have contemplated the desert with fear, by car you’d merely consider it with care. In a plane it was irrelevant. Janelle concluded that raw economics drove this compression as much as science. Centuries of constantly collapsing space and time had been driven not least by the hunger to poke into distant markets, to latch onto cheap labor, and to pull natural resources to wherever they were needed. This was “civilization” as a verb.

The demands for ever more commerce, ever faster, ever more profitably suggested that the horses-to-trains-to-cars-to jets acceleration was an inevitable feature of modern markets. We should expect it to continue, Janelle figured. Great fortunes would accumulate to those who mastered speed. To be fast is a competitive advantage; to be *faster!* decisive. *Absolute speed is absolute power*, as the philosopher Paul Virilio has framed it.[197] That idea of “Space Time Compression” sounded felicitous enough, like the name of a clever magic trick. Space *compressed*? Time *reduced*? But that felicity hid the violent, revolutionary nature of the mechanism so powerfully at work. It meant that the battlefields of power, which for most of human history had been over the control of space, would now become – rather incredibly – about the control of time.

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[196] **There’s a phrase:** Janelle identified what he called “Space-Time Convergence;” Later geographer David Harvey renamed it as “Space Time Compression,” which is more commonly used today.

[197] **Absolute speed:** See Armitage, John, Ed. *The Virilio Dictionary* (Edinburgh: Edinburgh University Press, 2013)

Janelle published his first paper on space-time compression in 1965 in the pages of the reference journal of mapmakers, *The Professional Geographer*. But he was, of course, blowing up nearly everything professional geography thought it was about. “Geographers, as physicists, have traditionally been concerned with the positions of points (places) in space,” he wrote. “However, geographers have not employed the concept of ‘velocity’ in studying spatial relationships. Yet it might be of value and not too far-fetched for the geographer to ask ‘at what ‘velocities’ are settlements approaching one another?’” We should ask ourselves the same question. At what velocity are you and I getting closer to other points on the planet? Janelle was writing in 1965. He was concerned then about the sound barrier as the practical limit to speed. But imagine his insights applied to an age where networks are switched always on, constantly packing the world ever tighter? Where a mistake or an innovation or an attack in one place can happen instantly and everywhere, because the speed limit is the speed of light?

4.

At first glance, of course, geography seems the least dynamic of sciences. It is rooted in the glacial-paced realities of geology, a discipline where speed is usually measured in the creaking, inches-a-century advance of tectonic plates. The faster links of transportation, whether they are trains or planes or data connections, lay blanket-like atop that slower-moving geological layer. These high-velocity networks are, in a way, a new geography. Mathematicians and data architects call the landscape they represent a “topology”. The word refers to maps that can be re-arranged as a result of connection, the way in which speed and distance between two points does affect how “far apart” they are. You can think of it this way: Geographies are pretty much constant; topologies can change in an instant. In geographic terms, Moscow and St. Petersburg are always 450 miles apart.

When you hear a network engineer talk about designing for a certain “topology” you should think of hearing an architect describe the natural geography where a bridge or a sky-scraper will one day sit. When you use an app, link to a finance market, or wire yourself with sensors you’re connecting to a topology that has been designed and mapped – and where what you can do is determined by that landscape. An appreciation for tone and movement on a topology is a sign the new sensibility we have called the Seventh Sense. Napoleon saw the battlefields of his age differently than his enemies. They saw flat surfaces for the collision of soldiers, he saw a third dimension, saw air filled with artillery and decisive top-down dominance. Our Seventh Sense masters, those who can perceive a new order emerging, see wired topologies in this same fresh way. Even though these landscapses are often invisible or made up only of narrow fiber strings, it’s important that we try to picture network topologies as real, as alive and buzzing and rich with connection and data, places where fortunes will be made and lost, wars fought – and every bit as influential as physical geography.

Topologies represent the landscape where real-world edifices like the Web or the NYSE or Hizballah are built. They can change shape, instantly, depending on who is connected, and by the speed and thickness of that connection. The topology of Wall Street in the 1920s, for instance, was largely defined by who happened to come to the trading floor on a given day; today it is a global landscape, influenced by news, rumors and real-time profit twitches anywhere on the planet. Just like moving a river from one place to another would radically change the utility of a bridge, a change in topology changes the shape of systems that depend on it. That Seventh Sense instinct – the powerful can become useless because of connection, the useless can become powerful – is earned first through a fluency and even faith in these sorts of rapid, fate-changing topological shifts.

In recent years the topologies of our network world have changed at the pace of technology, which is very fast indeed. Every new piece of a network, every new platform or protocol, alters how we connect. This process works on our sense of distance like an efficient, strange sewing machine: Something very far away can be, suddenly, with one stitch of innovation, right on top of you. The speed and the quality of a connection is what determines how honestly "near" or "far" something is. Location is, in a sense, as changeable as velocity.[198]

Distance, on any living, networked web, is an endlessly pliable sheet. Just as you can bring two distant points on a piece of paper right next to each other by folding the sheet, so you can glue points in networks together by bending the space on which they are connected. A map of the networked world or of nations or even of our city is not some given, settled graph. One small twist and we are, like it or not, right on top of each other. This makes it particularly murderous to hold onto the old idea that you and I are unconnected points. Do countries like America or China have legitimate interests thousands of miles away from their coastlines? Of course.[199] In this way, the entire premise of Enlightenment life, the atomic focus on the power of the individual, becomes dangerous.

It is now essential to use virtual topologies to operate in the real world, to bend these ethereal elements of connection to influence and even total control. Thomas Dullien, one of the researchers who discovered that "rowhammer" chip hack captured this in a new law of network security that echoes, in fact, through all of connected life: You don't have to possess an object in order to control it. "Being hacked," he explained in a 2011 speech called *Why Johnny Can't Tell If He's Compromised*, "is loss of control without change of ownership or possession."[200] Your phone, resting constantly in your pocket, may in fact be pwned at every keystroke by someone thousands of miles away. This is an extremely important idea, an expression again of how connection changes the nature of an object: It makes it controllable without possession. An army might be able to master an enemy's territory without ever possessing it, for instance, if it can manage to own the crucial topological infrastructures: banks, databases, communications systems. One nation might be able to pwn another in this bloodless fashion. Networks, you recall we said, will break nations in the future. This is just how such smashing control will be achieved, from the linked mesh running silently and irreplaceably under every element of national life. Today billion-dollar firms control cars, tools, or hotel rooms without possessing them. The links draw out value. Michaelangelo's famous urging resonates here: *Every block of stone has a sculpture inside of it, and it is the task of the sculptor to discover it.* Every network has a topology. It is the task of each of us to discover it.

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[198] **Location:** John May and Nigel Thrift eds. Timespace: Geographies of Temporality (London: Routledge, 2001) 2

[199] **Of course:** Distributed Lethality in Proceedings (U.S. Naval Institute) Jan 2015 p. 343

[200] **"Being hacked":** Halvar Flake, *Why Johnny Can't Tell If He Is Compromised*, keynote Area41 Conference, June 2014, Zurich

Topologies linger everywhere there is connection. Networks can be designed in countless ways: The fishnets of Baran, the hub and spoke of a data center, the ever-changing mesh of a trading system. But what they all share is connective topologies of one sort or another and – as a result – the fact that risk that lingers any one place in the system also exists nearly any other linked place. Constant connection produces, as an unsettling result, constant threat. Connection spreads, distant parts of the world are superglued via that topological folding. Topology is not marked out merely by a description of how we connect. Rather it is scored on what is called a "trust graph", a kind of map of who you or a machine or a network trusts – and how much. An older generation still thinks a network is something made of wires and switches and plugs. But their real power comes from something far more ethereal. When you connect to a person or an object, you connect as well to its whole history of decisions about who to trust. Every EU country connects to the choices of a single border guard, for instance. Who does he trust? Is he right? Financial systems and technology webs are the same. If you are what you are connected to, you are also – rather unnervingly – the sum of every trusting (or untrusting) choice someone or some machine has made. This creates a worrying result: "In the systems we've built now," Dullien has explained, "there is no way to establish who is in control." If you or anyone you're linked to has made a trust mistake, you may be pwned, vulnerable, and one hacked slice from loss of control.

Any object – your tablet computer, a digital currency, a hacked drone – can become dangerous now in this sense, hacked by Warez Dudes into lethality. And nearly any place can be attacked in some fashion or another, as long as it is connected. The old chestnut of military strategy, that a clever or desperate army can always "trade space for time" –make a gradual retreat in order to buy time, is nearly gone now. Space is a wall that can be breached by time manipulation tools; there's no place to retreat to. Markets in Mongolia, airports in Europe, Chinese urban landscapes – all of these now can be struck, more or less at any time, because they are all connected. Unlike traditional conflict, where the location of your most terrifying dangers might be exactly pinpointed and watched, where military zones and civilian zones were carefully divided by front lines, a connected world is one of potential universal peril.[201] The distinction between battlefield and everyday streets disappears and it takes with it – if we don't handle this properly – something even more precious: The division between periods of peace and of war.

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[201] **Unlike traditional conflict**: Derek Gregory, "The Everywhere War" *The Geographical Journal,* Vol. 177, No. 3, September 2011, pp. 238–250

That the knotting together of distance, speed and power changes the nature of an object was something Janelle, the father of "Space Time Compression," anticipated. He labeled it "Locational Utility", the way in which something becomes more useful or powerful or relevant as it is drawn closer to us by increased connection and speed, even if it stays the same "distance" away[202]. A nuclear weapon three hours from landing and one that is three months away are, nearly, a different object entirely. Adam Smiths's famous remark in his *Theory of Moral Sentiments* that most people would be more perturbed by the loss of half a finger than the news that a million Chinese had perished, begins to take on a different color in an age when a billion and a half Chinese are nanoseconds away.[203] When we say that connection changes the nature of an object, we mean this; Networks change the "locational utility" of anything they touch. When connection makes an object instantly, clearly visible, it revolutionizes its potential. Little wonder so many great fortunes are being made in applying this trick of plugging goods into compression engines like apps or matching services. It's hard to know if firms like Airbnb or Uber will be around in a decade, but the economic energy they release emerges right out of Janelle's theories: Connect a car seat or an empty room and you change its nature. You give it value. Part of our unease now – and part of the problem we have in strategizing about the world or our businesses – is that stability on our topological maps is some time off yet. There is so much yet to be connected. So many new topologies to be built.

"Time *is* a ride," Danny Hillis once remarked in an early meditation about his rock-sunk clock, "and you are on it."[204] He was right. That ride takes place, in a connected age, on topological rails. And just how "instant" you are will be a mark of what sort of ride you're on. In the same way that rivers and oceans and mountains define different landscapes in real geographies, topological neighborhoods too will each bounce with funny quirks. Some will be super fast. Others yoked by politics. Citizens of Santa Fe or Mumbai may choose to compress time in different ways. But they will all share a common desire. To do more with less. The German philosopher Peter Sloterdjik, writing about the way in which some people breeze through airports and borders (with first class tickets and pre-approved immigration) while others struggle to move at all out of refugee camps or poverty traps, has labeled the winners of this new order as a kind of "kinetic elite"[205]. They are a kind of temporal elite, in possession of golden keys to a special, frictionless topology. The technology to eliminate space and capture time.

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[202] **He labeled it:** Donald G. Janelle, "Spatial Reorganization: A Model and Concept", *Annals of the Association of American Geographers* (Volume 59, Issue 2, 1969)
[203] **Adam Smith's: famous remark:** Adam Smith and Knud Haakonssen. *The Theory of Moral Sentiments* (Cambridge, U.K.: Cambridge University Press, 2002) 198
[204] **"Time is a ride"** Stewart Brand, *The Clock of the Long Now: Time and Responsibility*. (New York: Basic Books, 1999), 67
[205] **The German philosopher:** Sloterdjik, TK

The computing programming technology that lingers inside most data centers now and that makes sense of the ceaselessly arriving bits – *Here is information on a billion people. How many are named Bob?* – is known as MapReduce. The name combines two well-know computer fuctions, Map and Reduce, and it is just the sort of program Janelle and Hillis would have dreamed up, had they ever met. MapReduce divides computation work among thousands of machines, just the sort of massive parallelism Hilli had in mind. What it *implicitly* does, however, is crunch what might have taken years into microseconds. If the charmed phrase of James' stately Victorian elites more than a century ago was "Summer Afternoon," ours might be "MapReduce", a kind of magic two word code for a whole way of living and thinking.

5.

The most successful political and economic systems of the past, the ones that marked the winning "convergence" club of humanity's last great leap, let people liberate themselves into a life of their dreams. Liberty meant tearing down old barriers to influence and security and knowledge; tipping over the Bastille, escaping colonialism. And it meant, too, providing a scaffolding of education, of social support, of laws and stability for citizens. The industrial, urban and rich countries that populate our world now evolved that way because their citizens made them so. They escaped the tyranny of the pre-modern, of a world where the small town you were born in and the pattern of your parents' life were a kind of prision for your hopes. This was the whole trick of the Enlightenment, after all: What do you want to be? You decide! What do you want your nation to be? Decide that too. *Dare to know!*

Look ahead now. The very best future political and economic arrangements will need to do something more than simply liberate us. They will have to enable and permit citizens to compress time. Just as the idea of a democracy was shocking once, this concept of a system tuned not merely for liberty but for compression of time should rattle us a bit. Certainly the attempt to achieve such an aim, to build the scaffolds and rails a time compressed world demands, will jostle much of what existst now. But to be modern means, in essence, the right, the ability to engage in compression. Nations or corporations or ideologies that can deliver this liberty of velocity – and that can construct and manage the flat-out fast, networked, artificially topologies such a life demands – will grow, thrive, accelerate even faster. The others, slowed by history or blocked by social or ideological designs, will miss the turn. They will be the new divergence club. Fast networks will elude them. Self-defense will be impossible; their time will be as vulnerable to easy manipulation and attack as the resources of China and Africa and Latin America were in the face of greedy colonialist plunder several hundred years ago.

There is no equality of justice between the weak and the strong, the Italian historian Giambattista Vico once noted.[206] So in our age. Between the fast and the slow? No equality either. Partly this is because of something Janelle spotted: The remarkable advantage, the wealth and opportunity, that accrues to the people and nations and businesses that can compress space and time. *Die Ware liebt das Geld*, Marx famously wrote: Commodities love money. Speed is now the decisive commodity – and it *loves* money. (The feeling is mutual.) Velocity lets us achieve that ancient goal of doing more with less. The race for speed lights something competitive: The faster I go, the faster you feel you need to go, the more powerfully you feel your slowness.

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[206] Vico, New Science

The centripetal charm of acceleration, the way that speed attracts us, and then makes us demand even more speed, honestly surprised the earliest architects of steamships and rail and airlines and roads. They under-guessed how popular their tools of space-time compression would be. Surely the maximum number of people who would ever want to zip from LA to New York would be about 1,000 per week, jet airline pioneers assumed. Would more than a few hundred engineers really want their own computers, Gordon Moore asked at a dinner party shortly after Intel proposed putting his chips in the first PCs. Yes, it turned out. Billions more. Highway designers call this surprise "induced traffic": The faster a highway, the more people pile onto it. Urban planners in Los Angeles in the 1950s looked at their packed, congested roads and thought they could fix them by adding lanes. They embarked on construction programs, tore up the transportation network that girded the city and built a new one featuring optimistic 20-lane highways as wide as a football field and flat as a plate. Traffic got worse.

Say's famous economic law that "supply creates its own demand" seems especially fulfilled in an age where velocity is so valuable. Speed too creates its own demand. The faster any one piece of the network starts to rattle and move, the more profoundly we notice how slow the leftover bits are. We want them accelerated too. Total network bandwidth grew by an heroic factor of 1000 times between 2005 and 2010. Speed? It increased by just 20 times. *Induced traffic.*

What is it, exactly, that we're so hungry for? The extreme end of fast connectivity is what computer systems designers call "statefulness" – a word that has nothing to do with states like nations, but rather with the condition of a connection, the "state" it is in. Early electrical circuits were either in a charged or uncharged "state", switched on or off. Today when we talk about a "stateful" connection, we mean a link that we maintain, always on. It's the difference between a video call and a letter, between looking at your wife here and now (a "stateful connection") and a photograph of her ("stateless"). Real-time everywhere connection doesn't merely kill distance; it attacks delay too. Older generations would "break state" when they left family at home or friends at school with a "see you later." Our generation? "See you always". We never quite leave. Technology permits us to remain in constant touch this way, to neve break state. "We don't have a word for the opposite of loneliness, but if we did, that's what I'd want in life," the milenial writer Marina Keegan wrote in a famous essay that captured more than a little of this zeitgeist. "More than finding the right job or city or spouse – I'm scared of losing this web that we're in. This elusive, indefinable, opposite of loneliness."[207] The early interface of Snapchat, where you had to leave your finger resting on the screen in order for the video to unspool, was a kind of metaphor for this unbreakable relationship between touch and connection. (As was, in a different way, the diffident "out of my life" left swipe of Tinder.)

"Good theories of the mind," Hillis' mentory Marvin Minksy once observed, "must span at least three different scales of time: slow, for the billion years in which our brains have evolved; fast, for the fleeting weeks and months of infancy and childhood; and in between, the centuries of growth of our ideas through history."[208] What we face now is a new time scale to add to Minksy's list: The instant. Super-fast networks are different than slower ones – even ones as "slow" as what we have today. The ideal network is one that hovers near zero latency, where the time between what you want (or what the machines want) and the effect is as short as possible. You click a button to watch a movie and it starts instantly. You want to shut down an enemy air force, you do it with a single switch. The fantasy of a really "zero latency" system is impossible of course because even electrons moving through copper are not instant, but near-zero? Light-speed? You've probably heard stories of high-frequency stock traders who move next door to exchanges so they can capture and profit on an extra sliver of a millisecond. That's the quest for low latency. (And more proof of the profitable link between speed and money.) Our challenge will not be about being faster – the technology will make that inevitable – it will be about managing the insane, still unknown demands of a world of suddenness. "In a distributed system, it is sometimes impossible to say that one of two events occurred first," computer engineer Leslie Lamport wrote at the start of his famous essay "Time, Clocks and the Ordering of Events in a Distributed System" – a sort of technological parallel to Simmel's "The Metropolis and Mental Life" written a century earlier. The problem, Lamport explains, is that what happens in one place can happen nearly instantly everywhere. There's no time to react; so your entire worldview has to be capable of update at an instant's notice. When the time between a Warez Dude finding an exploit and your own systems being compromised is zero, then the discovery of the hole and the creation of your vulnerability happen effectively at the same time. "The relation 'happened before'", Lamport explains, "is therefore only a partial ordering of the events in the system. We have found that problems often arise because people are not fully aware of this fact and its implications." [209]

Networks, we are discovering, don't only compress space and time, they are compressing in the process the path to knowledge. We might call this "skill-time compression": Techniques that once took a decade of training or that demanded access to million-dollar machines, can now be understood, applied, and then evolved unimaginably fast. No one had ever heard of the Syrian Electronic Army a year before they were hijacking famous websites, injecting world-class malicious code into opposition computers and demonstrating a digital attack fluency. [210] Of course the charming side of such a shift is evident too: Walk the Vatican with an historian in your ear, master sourdough in a weekend. There's something not a little miraculous in the way the networked tools to recombine DNA or hack computer code or design viral software are getting both more sophisticated *and* simpler. If earlier eras put epoch-making implements into human hands – the knife! the train! – our age is now placing new, mind-shaping forces within instant reach.

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[207] **"More than finding":** Marina Keegan, The Opposite of Lonelinenss", Yale Daily News, May 27, 2012 (accessed online).
[208] **"Good theories":** Marvin Minsky, *The Society of Mind* (New York: Simon & Schuster, 1986)
[209] **"In a distributed system":** Leslie Lamport, "Time, Clocks, and the Ordering of Events in a Distributed System", *Communications of the ACM, July 1978,* 558

In a networked world, economic or military power doesn't come just from controlling territory or information alone. It comes, more and more, from this matery of the temporal. Securing territory today does not, alone, solve many problems of safety. Control of information, of topologies and finally of time – this is what matters most. Such temporal security will be elusive; always in need of defense. The arrival of airpower in World War Two, for instance, shifted battles from two to three dimensions. "Only large states are able to resist three-dimensional envelopment," the historian Nicholas Spykman wrote in 1942.[211] Even today, "Air Superiority" is the precondition of nearly any American war. If we can dominate you from above, nearly anything seems possible. But networks add a fourth dimension. "Time Superiority." Can you move faster than your enemy? Can you bog them down? Or are you a victim of fourth-dimensional envelopment. Control of time – yours, your enemies – this will decide your strength.

6.

Back in the fall of 1988, at about the same moment that Danny Hillis and his team were busy peddling their amazing Connection Machine – and trying to smash every world computing speed record they could find – another device appeared in the world of massively parallel super computers. It was, everyone who saw it agreed, an extremely strange machine. It's appearance was completely unexpected. It's designer was not a famous thinker about parallelism, cavorting with TV network founders and physics Nobelists. In fact, its very success emerged from this strange face: The creator knew basically nothing about the sort of parallel design that informed Hillis' thinking. Which was strange, because it was far more "parallel" than the Connection Machine could ever be. It was also cheaper. Simpler. And: It was faster. In fact, it was the fastest parallel machine in history.

The machine began, quietly enough, in the mind of a 28-year old Cornell graduate student named Robert Tappan Morris. Morris came by his computer chops honestly enough: He was the son of Robert Morris Sr., the legendary NSA scientist we encountered several chapters ago, the man who penned those partly amusing, partly terrifying *Golden Rules of Computer Security*."Rule One: Don't Own A Computer." The machine that Morris Jr. created was madeentirely of software. It took the form of a compact, simply designed computer program he'd written and designed to spread quickly and easily on the young systems of the Internet. It ran a mere 99 lines, took most computers nanoseconds to execute and it worked like this: The program – it later became known as a "worm" by the police who would come to find and arrest Morris Jr. – would find an open door on a network-connected computer. (In 1988, the pre-Warez Dude era, finding such doors was not difficult. Finding *locked* doors was probably harder.) Once Morris' program had slithered inside and loaded itself onto the machine, like a dog slipping through an unattended puppy door, it would sniff around, rattle a few more doors to find any passwords that had been left unsecured. Then it would move on to the next machine. Knock, knock. Rattle, rattle. Next machine. Morris designed his code to simply repeat this process over and over. Filling, as a result, each machine's memory with multiple, peformance-deadening copies of the same program. A house full of puppies, in a sense. After several hours of this flu-like spread, a wave of unplanned, unending computation began choking the net.

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[210] **No one had heard:** Edwin Grohe, "The Cyber Dimensions of the Syrian Civil War: Implications for Future Conflict", *Comparative Strategy* (2015), 34:2,

[211] **The arrival of airpower:** Nicholas John Spykman, "Frontiers, Security and International Organization," *Geographical Review*, Vol 32, No 3 (July 1942) p. 439

Morris later explained he'd only meant his program as a demonstration, as a test of sorts. He wanted to show how machines might be made more safe. But he seemed to grasp, almost immediately, that he'd made a mistake and that the worm was running away from him. He emailed a friend: How the hell to stop it? His friend had no idea either. They scrambled at least to warn system administrators about the dangerous code that would shortly devour their machines. "There may be a virus loose on the Internet," they wrote. But that note, in a bit of bad luck, was quarantined inside a Harvard computer that had already been unplugged. So, a few hours after Morris released his code, unwarned and unprepared, the Internet froze. [212] On November 2nd and 3rd, 1988 machines around the world were shut off, cables were pulled out of walls, and systems were wiped and restarted in a race to stop the robot-like spread of the disease and then to finally kill it off. [213]

The Morris Worm was, on those fall 1988 days, acting out a sober-minded insight of the famed biological historian Alfred Crosby: "The nineteenth century was followed by the twentieth century, which was followed by the…nineteenth century."[214] Crosby meant that our age of topological connection meant we were back, again, in an age of infections. And this was true: Morris program was mapping out, like an epidemic, new routes in the age of high-speed digital contagion. But – and this is why we care about it here – by the time it reached "peak infection", the worm was also doing something else. It had infected tens of thousands of machines, which were all cranking away in unintended harmony. During the 48 hours of its brief and unforgettable life, it was later calculated, the Morris Worm had become the most powerful parallel computer in history. At its peak, it managed to achieve a processing speed of 400 billion operations per second – about twice the speed of the most expensive supercomputers of the day.

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[212] **So, a few hours:** David Moore, Colleen Shannon, k claffy, "Code-Red: a case study of the spread of a worm on the Internet" *IMW '02 Proceedings of the 2nd ACM SIGCOMM Workshop on Internet measurment* (2002), 273-284

[213] **Morris later explained:** Ted Eisenberg, DavidGries, Juris Hartmanis, Don Holcomb, and M. Stuart Lynn, Thomas Santoro, "The Cornell Commission: On Morris and the Worm", *Communications of the ACM* (June 1989, 12: 9) 706

[214] **The Morris program:** Alfred W. Crosby, *America's Forgotten Pandemic: The Influenza of 1918* 2nd ed. (Cambridge: Cambridge University Press, 2003) xii

Like any unexpected epidemic, the worm became a social, cultural and technological milestone. First, it caused Morris to be arrested. He was handed a $10,000 fine, some community service and several years of probation. He later went on to found an important Internet company, to join the faculty of MIT and to receive the highest honors in computing for his (other) efforts.

Then, a year or so after the virus had been finally corralled, the computer scientist Fred Cohen, one of the earliest specialists in malware – in fact, the man who invented the term "computer virus" – wrote an article that challenged the notion that all computer viruses are, inherently, bad.[215] What drew his attention was that fabulous, unbelievable record of the Morris Worm: 400 billion computations each second. "The features that make computer viruses a serious threat to computer integrity," he wrote, "can also make them a powerful mechanism."[216] This optimistic gloss, which sounded an awful lot like "The Plauge was great for humanity!" if you didn't follow Cohen's logic, triggered a furious response. Eugene Spafford, also a well-regarded computer researcher, fired back: "For someone of Dr. Cohen's reputation to actually *promote* the uncontrolled writing of any virus, even with his stated stipulations, is to act irresponsibly and immorally."[217]

So here, then, is a line, of sorts. The Morris Worm, an expression of really massive connection and interaction and speed, is a model for the world we live in now. Fast, linking with a mind of its own, running best (or at least fastest) when it uses the design of the system to spread on a topology optimized for speed. But who is right about the implication of such an historic design. Cohen? Spafford? Do we want our whole world cranking away, super fast, compressing time to nothing?

We can, all of us, decide to fight against the very ideas of a network. Or we can, like Cohen suggested, look at the terrifyingly fast nature of this world and begin to see something else. The totally unimaginable. Of course Spafford was not wrong. There *is* something scary and thought-muddling about the idea of intentionally authored computer viruses, running wild, ever faster. But there is something thought-muddling about this whole world we're entering. Networks are pulling at every existing structure. They hum, really, with the most elemental and precious human data – our DNA, our wedding photos, our hopeful voice mails and most essential knowledge, our small savings against disaster. In its speed and its depth, in its increasingly comprehensive grasp of each of us and our world, this new network order is at once the most amazing thing we've ever created and the most terrifying. But recall, for a moment, Hillis's dream for his parallel computer: "The ability to configure the topology of the machine to match the topology of the problem." What if we really could rewire our thinking, our networks and politics and economics to match the problems we face now? Finally, with the Seventh Sense kicking alive in each of us, we can at least see the topological landscape where such a construction might occur. Now we must turn to the exciting question of just how we'd configure it to do our bidding.

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[215] **Fred Cohen**: Frederick B. Cohen. *A Short Course on Computer Viruses* (Pittsburgh, PA: ASP Press, 1990)
[216] **"The features":** Fred Cohen, "Friendly Contagion: Harnessing the Power of Computer Viruses", *The Sciences* Sept/Oct 199, 22
[217] **Eugene Spafford:** Eugene Spafford, "Three Letters on Computer Security and Society," *Purdue e-Pubs 1991*, 91-088

We've covered a lot so far; perhaps it is worth a glance back.

First, we've come to see how networks really operate, the way in which they breed a lively connected skein that concentrates *and* distributes power. These systems are, as a result of their very design, plucking apart many of our old structures and ideas. Recall my dad, the doctor, ripped one direction by millions of disease advice websites (distribution) and in the other by massive diagnostic databases (concentration). This pulling process creates too, as we saw: Billion-user firms (and billion dollar fortunes) bred with breathtaking speed. Drones, derivatives, waves of migrants torn from their states but plugged into technological tapestries – all of these are products of network power. Connection, we learned, changes the nature of any object. You. Me. Money. Terrorists. Pretty much anything. And because there is a lot more of the world that has not yet been fully connected, it's easy to see that we live in a revolutionary age.

Second, we learned that the world of networks is complex. It's made up of many *complicated* pieces, but complexity is something entirely different: It's the unpredictable and colliding evolution you might see in a rainforest, where uncountable forces intermingle to produce life and death, growth and change. Scientists call this "emergence" – and it is happening on all our connected systems. Connection produces new, ripplingly powerful and unpredictable structures. The Arab Spring. The 2008 financial crisis. Connection changes complicated objects not least by making them complex. This is why our whole world, even the parts we might expect to be most stable, whips around now with a new and wild energy. In a way, we saw, this should reward a careful confidence: Go ahead and break the old systems. Something new will emerge.

Third, we followed the trail of hackers like the Warez Dudes and discovered something unnerving about the networks around us. Not only are they honeycombed with dangerous and unpatchable holes, but historically unmatched amounts of power rests in their central cores. The reason hackers are so eager to get to these kernels of power is that in doing so they can manipulate entire landscapes of power with a profound efficiency. A "weird machine," fired with an invisible and dangerous hacked logic, is a possibility that flutters through any network. Trade. Politics. Finance. Choices made in the center of network systems will redound on each of us. This is why we say that if in the past the most important things happened in public – wars, riots, and elections – in the future many of the most powerful shifts will, rather worryingly, occur in secret.

Fourth, we met the New Caste that masters many of these hot cores of power, for good and ill. Past eras were dominated by merchants, sages and soldiers who competed and collaborated in the pursuit of power. Now a new, young technological group is appearing. The nations and companies that train and equip them best of them will have an incalculable advantage. But there's a hitch: As much as this group knows about networks, they know little about history or politics or economics. Dangerously, they often see the world as a machine to be coded.

Fifth, we unearthed a new and invisible set of landscapes that will decide much of our future. These are called "topologies" and they are the connected fields on which power moves now. The web where stocks are traded, cyber attacks occur, imports are moved, or biological data are recorded and studied – each of these is a crucial topology. Control of them will be as important in the future as control of sea or air or capital once was.

And, finally, we learned what the networks are for: The compression of time. For all their technical magnificence, we find that beating in the cold technological heart of these systems is a most human desires, to negotiate a bit the one really inarguable constant of our lives: We are all burning candles. The compression of time is why we connect. It lets us do more, experience differently, live longer. What the demand for liberty was to the Enlightenment, the call to compress time will be in our future – a fundamental political demand. None of our existing institutions have been built to answer this cry.

These six elements make up a rough outline of a new sensibility. To see them at work in the world is the mark of a powerful way of thinking and feeling. The Seventh Sense. And this is important, we saw, because the shift ahead of us really is like the Enlightenment in its scale. It will tip everything over. It can't be totally understood in advance. We can see now that our old institutions are failing. Their strategies for solving problems only makes them worse. We saw how, at that level of war and peace, old ideas are laying new traps. No one in power seems to have a clear, convincing picture of just what is going on. We can feel the danger we face, like rippling heat from a nearby inferno – our world tugged into the future by a class of old leaders who don't understand networks and a collection of new technologists who don't understand the world. We had better find some way forward that does not depend entirely on either of these groups. The first may destroy our liberty in the name of an elusive security; the other will consume our freedom in pursuit of a mad efficiency. And there's one last thing we didn't really learn here, but I think you probably suspected it even before you started reading many chapters ago and met Master Nan and his warning of impending "spiritual illness": If we're going to shape this world at all, we don't have much time.

Part Three:
Gateland

Chapter Nine
Inside and Out

In which the Seventh Sense brings us face to face with the most powerful feature of our age – and perhaps of any age.

1.

The Shangani River runs in a small, green vale through some of Southern Africa's most remarkable nature. It marked, a bit more than a century ago, the northernmost line of the British presence in Africa. If other parts of Queen Victoria's colonial empire crackled with desert harshness, the mountains and hills rolling up from the Cape and down to the Shangani were notable for a pleasing softness, a shading towards pastels in the changeable light of the region. For London's colonial mapmakers, South Africa was a long-eyed treasure, an ideal restocking and transfer point for British ships headed for Lombok, Calcutta, Pondicherry and beyond. "We have lost America," the explorer William Dalrymple wrote Prime Minister William Pitt in 1785. "An halfway house would secure us India, and an Empire to Britain."[218] The African Cape would be that halfway house.

Following the 1814 Anglo-Dutch Treaty, which gave the British control of the Cape, the English pressed into Africa and found each newly opened district delivered more wealth than the last. A colonialist's dream: Diamonds. Gold. Endless fertile fields. The efficient engines of industry and exploration (and exploitation) of the British African Company chewed easily, profitably, into the land. "Having read the histories of other countries, I saw that expansion was everything," the mining baron Cecil Rhodes wrote in 1875. "The world's surface being limited, the great object of present humanity should be to take as much of the world as it possibly could."[219] And so the British did.

If there was a moment that showed the tenor, the power of this ruthless asymmetry most clearly, it was the battle that exploded along the Shangani in 1893. The Matabele, a powerful local tribe had been smash-and-run fighting the colonists for years. The British had tried to charm, pacify and bribe the Matabele and their Chief Lobengula with money and land. None of it worked. They tried threats. That did not work either. "The Chief has had all your messages," an imperial adjutant reported back to Cape Town after another frustrating, pointless discussion in late 1892. "But he has the art, not unknown to civilized despots, of ignoring what is not convenient."[220] Or perhaps the instinct of knowing what to avoid. One Boer commander, a blood enemy of Rhodes, had warned Lobengula: "When an Englishman once has your property in his hands, then he is like a monkey that has its hands full of pumpkin seeds – if you don't beat him to death, then he will never let go."[221]

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[218] **"We have lost America":** David Johnson, *Imagining the Cape Colony: History, Literature, and the South African Nation* (Edinburgh: Edinburgh University Press, 2012), 67

[219] **"The world's surface being limited":** F. Vershcoyle *Cecil Rhodes: His Political Life and Speeches, 1881-1900* (London: Chapman and Hall, 1900) 7

[220] **"The Chief has had":** *Copies and extracts of further correspondence relating to Affairs in Mashonaland, Matabeleand, and the Bechuanaland Protectorate*, Nov 1893,

So when, in October of 1893, the British finally tracked Lobengula down to the banks of the Shangani, the two sides faced off for what promised to be an intense, decisive battle. "It was just after 2:15a.m., a peaceful night, clear sky but on the dark side," one of the British infantrymen later recalled. "The bugles gave the alarm, the camp was all excitement in a moment, all noise with the opening of ammunition boxes and shouting of officers, the men were getting into their places. There was a din outside from the on-rushing Matebele *impis* that had decided to attack in the usual Zulu fashion." The British soldiers were outnumbered. They were thousands of miles from home, hanging on the thin end of a 5,000 mile supply line. The Matabele knew the territory. They were fighting for the lives and families and honor. But one sound was the decisive noise of the scale tipping towards the British soldiers. A hushed clicking against the yelling all around. *The opening of ammunition boxes.* The British, for the first time in African action, had mounted machine guns.

The weapons worked that morning on the Shanghani with a violence you and I would have expected. They reversed, more or less instantly, the Matabele advantages of men, familiarity, and even furor. Machine-gunned Matabele were found, in the hours after the attack, perched in trees, dug into dirt mounds and piled desperately atop each other, killed as they had scrambled. One British soldier wrote later that that the weapons had mowed down the Matabele "like grass." Lobengula survived, but his army was massacred down to a squad and he was reduced to pleading. "Your Majesty," he wrote to Queen Victoria in the days after the battle, "what I want to know from you is: Why do your people kill me?"[222] With this missive, the Chief entered the ranks of the Queen's powerless correspondents, once-omniscient feeling men in Africa or Asia or India who wrote her after some devastating battlefield reverse – baffled, confused, overwhelmed. Did she even read the letters? It was hard to know, but that only made the pleading more perversely imbalanced. The locals had no idea, really, what they were up against.

Martial leverage. It was the inarguable force of the 19th Century. It made Europe's colonial masters. Of course they lied, stole, fought – did whatever sensible and sleazy thing Cecil Rhodes and his ilk suggested was needed. The monkey with the pumpkin seeds. Expansion *was* everything. Imperial dreamers in London, Berlin, Brussels, Vienna and Paris saw with total clarity the immense historical imbalance across the chasm of industry and science and reason. The "Convergence Club"

Her Majesty's Stationery Office, Telegram from Assistant Commisioner, Palapye, to his Excellency High Commissioner, Cape Town, p 13.

[221] **"When an Englishman":** Vershcoyle, p 191-192

[222] **"Your majesty":** Report, Report, Volume 61 *Sessional papers*, (London: Commonwealth Shipping Committee, H.M. Stationery Office, 1893), 77 from University of Michigan online digitized library

against the divergent, the left-behind. Rhodes confessed ambition for his company to "take as much of the world as it possibly could," was simply an armed, greedy version of Kant's "Dare to Know". Just as no question was was unaskable, no place was too far off to possess or exploit. No position was secured by history or distance or sentiment. This was, for instance, the lesson taught to Lin Zexu, the Qing Dynasty bureaucrat sent out from Beijing in 1839 to stop the British opium sales that were reducing China to a drugged, useless coma. "Suppose there were people from another country who carried opium for sale to England and seduced your people into buying and smoking it?" Lin wrote the Queen. "Certainly your honorable ruler would deeply hate it and be bitterly aroused?" Lin thought that he was speaking as the voice of a great, eternal empire. Victoria never replied. To the extent Victoria was aroused by anything in Southern China, it was likely by the way in which, a few months after Lin's letter, the British emasculated the Qing military and moved into Hong Kong for a 150-year stay.

"Whatever happens," the Hilaire Belloc had his Colonial character Captain Blood famously quip in an 1885 poem, "we have got the Maxim and they 'ave not." [224] The machine guns were a totem of dominance in Shangani and on other colonial front lines; they marked a gulf between modern and unmodern, between industrial and agricultural. The weapons had first appeared in the mid-1800s on battlefields in the American Civil War, after the inventor Richard Gatling sent a package of samples to the White House and convinced President Lincoln – a famous gadget freak – that their firepower might bring the Civil War to a faster close. Lincoln ordered the Army to try the guns, but Gatling's early attempts were honestly too immature to tell decisively on the battlefields of the American south. Within a few decades, however, the guns were perfected in places like Africa, or on the frontlines of the 1904 Russo-Japanese War. They represented a compelling, inarguable logic of industrial war: A machine *and* a gun. *We mowed them down like grass.* You could read that line as metaphor: Mowing grass was, in the end, the act of a machine killing a wild, natural world into a clean, useful order. The Europeans were the grass-clipping machine; the rest of the world was, well, the grass. For a colonial temperament hardened for "The Great Game" of empire on the playing fields of Eton, preparing a lawn for tennis and a territory for exploitation were not particularly distinct acts.

The Shangani battle gunshots struck the European mind as powerful confirmation of everything they suspected about the magic violence of an industrial age. The image of such a device suited the aggressive, engineering-led mood of era. As Gatling – and his competitor Hiram Maxim – peddled the guns, they faced a predictable resistance, of course: Europe's cavalry officers were in love with their well-bred horses. But the age was, finally, the story of aggressive industry flattening old habits. Trains were assaulting the countryside. Factories were pounding apart the habits of labor. Social stampedes of speed-climbing *nouveau riche*, political attacks of new industrial unions and counter attacks all expressed this aggressive energy. The soundtrack of Germany in the decades after 1869, as Bismarck stitched together a new nation from dozens of hereditary principalities, was the ceaseless ping-ping of rail-building and welding and industry. How natural it must have seemed to add the rat-a-tat-tat of a Maxim gun. Crown Prince Wilhelm, the Kaiser's eldest son, wrote that defensive thinking was, "utterly foreign to the German spirit." Bismarck's "Iron and Blood" national motto became, finally, personal for many Germans, who were prouder to leave their universities with a hot-red dueling scar on their faces than a subtle ownership of Goethe in their hearts.

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[224] **"Whatever happens":** Hilaire Belloc, *The Modern Traveler,* (London: Edward Arnold, 1898)

"During the decades before the First World War," the political scientist Steven van Evera has observed, "a phenomenon which may be called a 'cult of the offensive' swept through Europe."[225] Wars, it was believed, would run with the same swiftness of trains or the new industrial sewing machines or steam-fired printing presses. It was this instinct that led German generals to assure the Kaiser in 1914 that a war begun in August would be finished by Christmas. English university students sprinted to enlistment centers in the days after the war began, worried the fight might end before they tasted blood. French farmers moving from their crops to the trench lines of Flanders, Russian aristocracy crowding towards the Danube, the politicians who led them all – they operated, mostly, with this same conviction. British Foreign Secretary Sir Edward Grey's mournful meditation on the evening of August 3,1914, the first night of the war, was a lonely one: "The lamps are going out all over Europe," he said. "We shall not see them lit again in our lifetime."

The First World War was a kind of engineering tragedy. The disaster had deep roots: domestic politics, the insecurity of kings, profound colonial greed. But also a fundamental miscalculation about the nature of war and peace in an age of industry. Machine guns – and all the tools of industrial war, from gas to battleships – were not magic tricks of fast victory or permanent peace, as some had thought. A mechanized modern army wasn't, as much as it may have seemed in theory or drills or in midnight massacres in the African bush, some steam-press built for cold rolling the armies Belgium and Prussia and France. In fact, the weapons encouraged battle as they piled endlessly in national arsenals. They tickled fears of fast or surprise attack, even as they gratified that weird continental hunger for violence. Hilare Beloc's poetic joke, the sly *we've got the Maxim, and they've not* took on an unexpected character when both sides had 'em. The machine gun reached the fiery acme of its purpose not as a spur to end wars altogether, as Gatling once hoped, but rather when it was married to barbed wire, to shovels and to gas – and then admixed with the trigger-tugging fear of 20-year-old boys. So: Sixty thousand British casualties in one day alone, July 1, 1916 at the Somme.

The rhymes changed. Hilare Beloc's jigs were a distant memory for the starved, surprised and shocked men in the field. Siegfried Sassoon:

> *You smug faced crowds, with kindling eye*
> *Who cheer when soldier lads march by,*

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[225] **"During the decades":** Steven Van Evera, "Cult of the Offensive and the Origins of the First World War", *International Security* (Vol 9, No 1, Summer 1984) 58

Sneak home and pray you'll never know
The hell where youth and laughter go.[226]

As soldiers dug into trenches that would endure for a half-decade, a terrible strategic fact dawned on the generals who led Europe's armies. The Great War was going to be a charnel house. The continent had built itself into a battle machine, wired by trains and telegraphs and armies. There was no reverse gear. There was not even a switch to slow it down, let alone turn it off. A massive, technology-powered, fast-moving system with revolutionary implications, built beyond the comprehension of any one figure or nation, had slipped out of control. And the men in charge of planning and directing the use of this super-fast complex? They failed everyone: their soldiers, their kings, their armies. They were all but insensible to the real nature of their age.

Sound familiar?

2.

Here, then, is a question of the sort – violent, loaded with the possibility of tragedy – that you'd rather not have to consider: A new way of war arrives, a new weapon, a fresh idea about fighting. Does it make your world peaceful or treacherous? The lethality of the equation of *guns x machines* at the end of the 19th Century appeared to some industrialists and bankers and statesmen inarguable evidence for peace. Everyone with such a violently efficient weapon; who dares start a war? As we now know, *machines x guns* was a formula for some of the worst killing in human history. Gatling's fond hope that his weapons would stop war was naïve, insane even. His competitor Maxim had been clearer eyed. A friend told him: "Give up your chemistry and electricity. If you want to make a pile of money, invent something that will enable those Europeans to cut each others' throats with greater facility."[227]

So: Let's be a bit warmer about this. *Networks x weapons* = what exactly? Is there some disaster lingering in our own future, as unimagined from our current perspective as machine guns and trenches were a century ago? Do we consider war impossible now? There's something sickening in such puzzles, of course. Think of the men and women who, over the millennia, have contemplated similar questions knowing full well the answer would be measured in blood and treasure and children. Put yourself in the place of the population of Melos, a peace-loving Mediterranean island whose destruction 2300 years ago was chronicled by Thucydides in *The Peloponesian Wars*. "Surely you have noticed that you are an island and we control the ocean," an unwelcome Athenian general intimated to a Melian citizens' council one day 243 BC as his soldiers and ships collected menacingly outside the city's walls. Athens wanted the Melians to join an alliance against Sparta. The Melians – like poor Lin Zexu or Lobengula of the Matabele – yearned only to be left alone. “You would not agree to our being neutral, friends instead of enemies, but allies of neither side?” they asked[228]. *No*, the Athenians replied, and then a line that has resonated through the problems of nations ever since: “It is the nature of power that he who has it takes; he who does not must submit.” The Melians voted stubbornly against surrender and for hope. Perhaps the Spartans would mount a relief raid? The Athenians might change their minds? Neither happened. The Melian men were betrayed and then massacred. Their wives and children were sold as slaves.

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[226] **"You smug faced":** Seigfried Sassoon, "Suicide in the Trenches" in *The War Poems of Seigfried Sassoon,* (Mineola, N.Y.: Dover Publications, 2004), 64
[227] **"Give up your chemistry":** John Ellis, *A Social History of the Machine Gun* (New York: Pantheon, 1975) p.33

What do networks do when they touch the balance of war and peace? How might we use what we know, what we sense, about a connected age to manage the dangers ahead? If an insane Cult of the Offensive flavored the end of the 19th Century, our own age vibrates, as we’ve seen, to a Cult of the Disruptive. The great tale of our times is the diffusion of a new, promising and disorienting network order. We’ve been told that all this interconnection makes war an impossibility. *Everyone would be a loser in such a war.* But the way in which that earlier age was so horribly wrong about the result of *machines x weapons,* should unnerve us. We don’t yet really know what *networks x weapons* means – to say nothing of *networks x networks x weapons*. Or, to sum up what we’ve seen so far in this book, *very fast networks x artificial intelligence x black boxes x a New Caste x compression of time x everyday objects x weapons*. Would you look at that weird formula and say conclusively: “Hey, we’ll all get along.” Me neither. We should worry about the day we might face a Melian choice of our own, when some general or infomanagerial despot – or some clicking computer – shows up, unwelcome, and says to us: *It should be obvious you are merely a node, and I control the network.*

When leaders label the rise of China or cyberweapons or terrorism or the decline of the US as the “main problem” of our age – and all of these have been designated as such by famous foreign policy figures –they are missing the revolutionary, uniting force that animates them all. Networks. Whether we are trying to slice apart the roots of the Islamic State or slow Russian territorial dreams or understand narco-economics or hedge-fund finance – connectivity touches and defines each problem. New and essential platforms for finance and biological data and artificial intelligence are emerging now, blossomed out of network connection. These ecosystems must be design, built, protected. All while the world we know kicks back around us, sometimes crumbling, sometimes fighting for its dear life. I promised earlier that we’d apply the Seventh Sense to some practical problem, and the deadly test of war and peace is the one I’d like to consider now. The sharpest challenge of truth for any view of the world is, after all, the design of a grand strategy. Get it right and you can secure your safety. The energy of the age can be your tool. Get it wrong and you reap the Somme, Melos, Canton, the Shangani. Recall General Liu Yazhou’s line: “A major state can lose many battles, but the only loss that is always fatal is to be defeated in strategy."

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[228] **The Melians:** Thucydides, *The Peloponnesian War*, Steven Lattimore trans., (Indianapolis: Hackett Publishing, 1998) Chap 5.; See also the excellent BBC performance of certain elements of Thucydides in “The War That Never Ends” available on YouTube

The leaders of our major global powers may be as blind to the dangers and possibility of our world as Europe's heads of states were to the nature of their era 100 years ago. You know what the Seventh Sense is now. Who among them has it? We should wonder if we've merely now done Hiram Maxim one better: Have we developed something with our age of connection that will reach its fullest potential in allowing us to slit each other's throats more efficiently? I don't think so, but understanding why means we need consider the networks, to feel them out with our new sense.

3.

The essential problem of politics is not difficult to state. It was true for Seneca in the Roman Forum as it was for Lobengula on the Shangani riverbank or is now for congressmen in Washington or cadres is Beijing: Who has power? Why? By power I mean the ability to control others, to tell them what to do – or what not to do; and of course to avoid being dictated to yourself in that "Surrender or die" way. Max Weber, the German sociologist of the last century, had it right: *Macht,* the ability to achieve what you want despite the resistance of others.[229] *Don't develop nuclear weapons*. Or *Don't attack us.* Or, *Join our alliance against Sparta* are all examples of power in action. The movement of power, from the balled-up fists of Kings and Popes and Emperors, to the hands of markets and voters and citizens, and now into a fresh, connected dynamic is the story of history. This is a lurching, worrisome, dangerous process even if it suggests some miraculous transformations. Whole new topologies of vital, life-giving control are emerging; surely contests for their mastery will occur. The terrible human infection of a hunger for power and security isn't, much as we might wish, something quarantined safely to the pages of Homer or Hitler.

So let's pass beyond describing the new and surprising elements that make up a Seventh Sense and onto its use. Examine our world with this instinct, for a moment. Picture that constantly stretched, complex network, spitting out drones, viruses, fortunes and disruption as it is wont to do. Recall the seething, insidious power of the Warez Dudes, the New Caste, the black boxes they all hunger to penetrate and make weird. Think of the compression of time, of twisting topologies that can place the distant atop us in an instant. What single feature stands out? Our world shuffles now, as all these forces slip into an order defined by closed spaces, by fresh in and out borders. What the Seventh Sense reveals as it feels at this new arrangement is gates. Everywhere. Facebook, bitcoin users, doctors with privileged access to genetic databases – all are gated, in-or-out worlds. Look around and see how many gates enclose you or your family or your company. The Internet. The FTSE 100. Your Apple or Android operating system. In our connected age, the act of drawing lines

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[229] **Max Weber:** Max Weber and Sam Whimster, *The Essential Weber: A Reader.* (London: Routledge, 2004), 355

between points is also an act of drawing a line *around* those points. It is not simply that we're enmeshed in networks now; no, we're enclosed even entrapped by them. If the great ambition of Cecil Rhodes' era was for the expansive conquest of territory, in our own it is for the construction and manipulation of gated spaces. *Gatelands.*

In an age of network power, no position is more important, formidable, influential or profitable than that of the gatekeeper. Defining who is in or out of any network is among the most essential moves of design. In financial markets, on the Internet backbone or inside the human immune system, the accept-or-reject decision determines a great deal. The first sign of order breaking down, whether it is the Roman Empire or your lungs, is an inability to manage what slips in and out. Flows of bits, of migrants, of gold and patents and medicines – all of these life-giving forces can be controlled, bent for good or stopped for ill, as they pass through or collide with gates. By gates I mean not only in-out passages but all of the tools that meter and enclose the various Gatelands: Protocols, languages, block-chains. Whatever binds and shapes an information topology. Any sort of code or encryption or binary instruction that can unlock an in and out. If you want to make a fortune or a revolution (or both), if you hope to shatter some barrier of tools or ideas between you and a dream, or to lead a religious revival, spread an infection of hate or revolution or insidious Morris-style computer code – then fundamentally this is what you have to consider: Where are the gates? How to smash them? How to build your own? We are entering, as a result of our dependence on networks of all sorts, a landscape where the very clustering of power creates new border regions, bridges and gates. If older, hierarchical systems craved a top – a king, a superpower, a Pope – our connected, meshlike age demands valves and protocols and gates. It hungers for connection, which means it hungers too for throttles and accelerators and brakes. And of course people to run them. To speed them up. Slow them. Finger off switches. This reordering of power will produce, is producing, a fight over topological spaces for finance, biology, trade or pretty much any source of power. The scramble is as urgent, decisive and essential as the one Rhodes and his peers embarked upon. Inside or out? A fresh Meliananxiety haunts us: Are you the gatekeeper? Or the gatekept?

We wander into Gateland the moment we switch our phones on. We enter it when we book an airline ticket, when our genetics folds into a pool of data, or when we take a new degree, master a computer language, or check on friends via one stateful connected platform or another. We enter it, in short, when we connect. Gatekeepers choose what we see. They determine the rules we follow, what we can and can't change. They reward us too – once we're inside – with benefits of speed, knowledge and safety. Gatekeepers, which can be people or protocols or code, decide who can join closed communities and who is left out and why. They pass us the fine benefit of the compression of time, even as they expose us to the zipper of instant potential disaster hitting everyone in a closed space at once. Gatekeepers control, for instance, how (and how fast) financial data moves between members of light-speed "in the know" trading pools, and the suckers outside. What you can see in your phone or your university computer, why, how – all of these choices have to be made by gatekeepers. They can, if they wish, manipulate any step of life inside their enclosed orbs of power – and by extension, they can twist data and machines and you. The line between perverting search results and election results is a thin one. Such a manipulation of data is trivial, which means the manipulation of you and I is, technically at least, trivial. It involves the laying of our preferences – what do we usually read, watch, who do we talk to, where do we live – against machine logic and vast data fields. Manipulation of data = Manipulation of us.

The idea of gatekeeping first emerged as it related to newspapers, back in the 1920s when politicians, advertisers and a few social scientists watched a print-information explosion – and developed an uneasy feeling about how the world looked through many newspapers. The personal whims of an editor, his political bent, his boss' economic interest – all of these laid on "facts" like a heavy distorting blanket. Minor twitches were turned into fear-mongering bait. Major global shifts were ignored. The papers are (nearly) gone now, of course. And the idea of gatekeepers merely bending headlines to suit a personal whim seems charmingly nostalgic. Gatekeepers today have a far more profound, subtle reach. They might be governments or regulators or CEOs or machines or research committees, each controlling the design and development of some "rich get richer" tool we depend on and – by marking that "in or out" line – exerting historic, invisible control. Genetic engineering secrets. Unthrottled data flows. Product releases. Do you want accurate DNA analysis? Fast protection from epidemic? A cyber-defense system? You can't have any of these, you know, unless you're in someone's fiercely guarded gateland. Even systems that look open – the Internet, the world of US Dollar transactions, the election rolls – are gated in certain ways. Of course there is – at times – a balance between the gatekeepers and the gatekept, between those of us inside a system and the tools and people who overmaster us. "In many cases, traditional literature focuses mainly on gatekeepers as elites who hold power in their hands while the gated are treated as powerless," the information theorist Karine Nahon has written. "In networks, however, it is necessary to give sufficient weight to the role of the gated, since being subject to gatekeeping does not imply that the gated are powerless, lack alternatives, or that gatekeeping is forced on them. Actually, being a gated sometimes is a matter of choice."[230] But sometimes, of course, it is also a matter of inarguable necessity.

In the slower, less wired worlds of our past, gates mattered too of course. Nations, governments, militaries, religious orders – all of these clustered behind (and defended) marked lines. Map lines, front lines, dogmatic lines. The Triple Entente that bound Britain, France and Russia together in the last century was as much a gated system for their own security as the Peloponnesian League 2500 years earlier had been. Deciding who could swap silk for spice beyond the Tang Dynasty's border was a gatekeeping choice, as consequential for Chinese strategists of the 8th Century as the decision about what might or might not be wheeled into the city was for the tragically uncareful councils of Troy. But now, in an age where connection decides so much, control over gates has a unique leverage. When you finally can feel out the topology of our age, when in anger or frustration or hope or wonder you are ready to act, then this is among the first questions you have to ask. *I'm on the topology now, where are the gates.*

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[230] "**In many cases**": Karine Barzilai-Nahon, "Toward a theory of network gatekeeping: A framework for exploring information control." *Journal of the America Society for Information Science* 59(9), 1493–1512.

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Gates in an age of instant, everywhere, smart networks are, you can imagine, different from the ones that girded Troy or the Tang dynasty. It's not merely that they're made of bits and algorithms not bricks, it's that the underlying nature of their power is different. The most visible evidence of this distinction was first observed by economists a couple of decades ago, as they contemplated the fortunes of the information age, wealth that had been assembled at an eye-watering pace. Unlike traditional businesses which turned over time into competitive slugfests with very low profits, many high-tech firms seemed to run with a new, nearly inverted logic. "Our understanding of how markets and businesses operate was passed down to us more than a century ago by figures such as Alfred Marshall," the economist Brian Arthur wrote in the Harvard Business Review in the summer of 1996. "It is an understanding based squarely upon the assumption of diminishing returns: products or companies that get ahead in a market eventually run into limitations."[231] Marshall had been the first to name this phenomenon in the 1890s: "Diminishing Returns". As any line of business gets more competitive, the profits – or "returns" to investment – shrink. Henry Ford invents a car, he has no competition at first and fairly prints money. But Ford doesn't enjoy his monopoly for long. Pretty soon the Dodge brothers follow him into business, as does Walter Chrysler and then a cascade of new auto companies. They all take a piece of the pie; profits for every carmaking firm diminish. Then the Japanese pile in. The Koreans show up. These new companies compete with growing intensity. Marginal profits decline for everyone. Then the Chinese. And the Indians.

As he studied the balance sheets of infotech firms, Arthur noticed something strange: Returns were *increasing* over time. As their markets matured some companies made more marginal money with each passing day, not less. Marshall's 19th Century industrial economics had never contemplated such a lucrative arrangement. "Increasing returns," Arthur explained, "are the tendency for that which is ahead to get farther ahead. They are mechanisms of positive feedback that operate—within markets, businesses, and industries—to reinforce that which gains success or aggravate that which suffers loss." In other words: Winner takes all. No second place. Arthur was thinking, as he wrote, about the then-nascent computer software business. Say for instance, Arthur sent you a copy of his paper to read before publication as a Microsoft Word document. Well, if you wanted to see what he had to say, you'd pretty much have to own a copy of Word yourself. If you then sent it along to some friends for their input, they'd be in the same bind. One after another, in just this fashion, users tumbled into the program. It became a standard, a "platform" in industryspeak.

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[231] **As he studied:** Brian Arthur, "Increasing Returns and the World of Business" *Harvard Business Review* (1996)

And Microsoft enjoyed a particularly appealing economic leverage: Developing Word may have cost millions, but once that work was done, each additional copy cost just cents to produce. This astonishing speed loop of profitability demanded a whole new economics. It also forced a reconsideration of what "competition" might really mean. Once Excel or Windows had settled into place, had become a *standard*, you couldn't really compete with it. New, optimistic maybe even better rivals rushed into the marketplace, but they were all assaulting the impregnable wall of habit, of a locked-in technology. *Should this be legal?* Arthur wondered. Traditional economics said such monopolies were bad for everyone. (As did the Department of Justice and their global peers as they chased Microsoft for a decade.) But was that right? The "platform dividend" that accrued to Microsoft was surely large, but if you could somehow total up the benefit to the rest of us? The convenience, the efficiency, the benefits of Microsoft's billions of research spending might dwarf even Redmond's massive profits. "Increasing returns," Arthur wrote, "cause businesses to work differently and they stand many of our notions of how business operates on their head."

The essential phenomenon Arthur spotted at work two decades ago is something we now know as "network effects" – an idea that changed how we think about businesses, and particularly about the sticky and alluring power of gated, connected systems in nearly any setting. In the years after Arthur's paper, billions of us ran madly along a course he had anticipated: We crashed our way as fast as possible into those single, winning businesses – rewarding them with near monopoly positions in exchange for the benefits of being "inside". In the twenty years since Arthur spotted increasing returns in software, eight different billion-user worlds have emerged – and others are not far behind: Microsoft Office and Windows, Google Search, Google Maps, Facebook, Google Chrome, YouTube and Android all exhibit that appealing, "If you use it, I'll use it!" logic. Profits and power, just as Arthur would have expected, followed right along. The most valueable company on earth in the early age of connection was one that, particularly, had perfected the idea of a closed iWorld where the efficiencies and charm of inclusion made outside assault difficult. Younger companies like Instagram, WhatsApp, Weixin and others hover not far from a billion users and point us to this gated model spread and repeated. It is easy enough to imagine a world where billions will be enmeshed behind certain gates.

It was just as Arthur predicted: If ten people use WhatsApp or Facebook or YouTube, it's hard for the eleventh to do something different. And when the eleventh person joins in, they make it harder still for the twelfth to walk a unique path. So: Windows runs on 90% of the globe's PCs, nearly 30 years after its first release. Google has 65% market share. Android runs on 81% of new phones. WhatsApp neared a billion users with less than 50 engineers on staff. Facebook passed a billion connected people and faced no real competition. The rich got richer.

How? "Seven friends in ten days," Facebook growth hackers repeated like a mantra in the early years, a humming meditation that carried them from dorm room to nearly every corned of the world[232]. If you or I joined the service and found seven friends in ten days, we would most likely stay, enjoying the benefits of the gated world, making it that much harder (impossible really) for friend number eight to wander somewhere else. Pretty soon, there was essentially nowhere else to go anyhow. The network magnetism worked so well that, as a result, Facebook's speed-looping connection machine cut the famous "six degrees of separation" posited by Stanley Miligram – the number of leaps between any two people on the planet – to four.[233]

Network theorists who came after Arthur call these "rich get richer" systems "power law distributed" because if you line up all the firms in a digital industry you find the winners are exponentially – by a *power* of ten or one hundred – ahead of everyone else. They slip free from the average gravitational center of a normal bell curve that marks most traditional business. A normal distribution would shape up like a chart of people who own cars: 20 percent driving Fords, 10 percent Nissans and Toyotas, and so on. Or it might look like the distribution of height: Most men are between 5'7 and 5'11, but 50% are scattershotted at different heights. Network systems, however, can breed commanding winners. It's not like 50% of online users are on the Internet and others are scattered across different systems. Users huddle into single winning clusters. It's as if 90% of the world always bought a Ford; or 90% of people were exactly 5' 11". These systems run faster and better and more profitably because they are locked-in, gated by technology standards and by common connection. When we say that *networks crave gates*, this is the sort of gate we mean. If you had to look for your friends one-by-one on Facebook, Friendster, MySpace, and GooglePlus you'd exhaust yourself. So, one winner emerges. Data scientists attribute the success of these winning nodes to "preferential attachment" – the idea that if Brian Arthur is using Microsoft Word and I'm using it you are likely to do so too. But there's another secret: More widespread adoption makes the whole system faster. Winner-take-all marks that network hunger for the compression of time.[234]

There's an additional feature at work in the very newest of these billion-user clusters that's worth our attention: It's not merely that we'll use them because everyone seems to be doing so, it's also that as more users weave themselves into each others' lives and the machines into too, these nodes of power get *smarter*. Google Maps can predict the fastest route from your house to your office because it can watch the movements of hundreds of millions of users, each silently pinging their location and speed as they creep through rush hour or sprint down an empty motorway. As more people use GPS enabled devices, the quality of this data gets ever better, like a video resolving itself from low-quality to HD in front of your eyes. Success attracts still more users. All of them are Google's sensors, in a way. Medical diagnosis, cybersecurity, trading algorithms, search – pretty much any linked ball of chips and humans and sensors throbs with this logic. The best of the leading technology firms understand the power of this logic: Google's TensorFlow artificial intelligence engine, for instance, was largely regarded by experts as nearly a decde ahead of competitors in 2015. So the company began giving away access for free. In traditional economic terms this would be insane; but with network logic the strategy is clear: The more people who use TensorFlow, the smarter it gets, which in turn attracts still more users. Dense and learning fusions of mind and data like TensorFlow and other soon-arriving AI systems are all gated universes. The "increasing returns" for those inside – you, me, our neighbors – breed mutual efficient success and, of course, massive power for their owners. We're part of the game too: The more people tied in, the better *our* lives get.

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[232] **The network magnetism:** Chamath Palihapitiya, "How we put Facebook on the path to 1 billion users." Udemy *Growth Hacking: An Introduction* lecture published January 9, 2013 and available on YouTube.

[233] **Winner-take-all**: van der Hofstad, p 24

[234] **But there's another secret:** Albert-Lazlo Barabási "Network Science", *Philosophical Transactions of the Royal Society A:* (2013) 371

The topological charm of these explosively growing clusters was first teased apart by the electrical engineer Bob Metcalfe in the 1970s. Metcalfe was hunting for a better way to send data – say grocery lists to his wife – through Menlo Park and he perfected a connection protocol called Ethernet, which soon became a standard for linking machines. What Metcalfe noticed, as more and more users piled into the gateland of Stanford's Ethernet-connected machines, was that the power of the system was growing *exponentially* with each additional user. This became known later as "Metcalfe's Law": The power of a network grows, massively, with each additional user. A system with one phone, for example, is really not very useful. Who would you call? A system with two phones means one possible connection – we can call each other. But when you increase the number of phones by a factor of two – from five to ten, say – the number of possible connections more than doubles from ten to 45 . The difference between Bob Metcalfe and his wife sharing grocery lists and a connected national network of husbands and wives is immense – an insight that led Bob Metcalfe and his wife to start a networking company that made them billionaires.

Metcalfe's Law has another angle, and it's here where some of the unnerving, dangerous political power of network gates is revealed: It's not merely that the power of a network grows exponentially with each additional user; it's that the cost of being cut out grows every bit as fast. Maybe even faster. If I shut you out of Google today, it's painful. But tomorrow – after a day of new information and websites and services come on line – it will be even more costly. The network scientists Rahul Tongia and Ernest Wilson have called this "The Flip Side of Metcalfe's Law."[235] To be excluded from a database of cancer genetics, for instance, when it has a million members is probably not such a painful problem; to be locked out of the chance to compare your genes with a billion others, however, is hugely costly. Maybe even fatal. Imagine if I cut you out tomorrow from the NYSE, your phone system, smart diagnostic webs, cybersecurity patches? It's not like you can swap our your Ford for a Dodge. There is nowhere to go. Gatelands produce "winner take all" systems, but they also produce these "loser gets nothing" dynamics – and an absolutely chilly, fatal cost of separation from the winning system. A discipline of network science known as "queing theory" helps us understand why. In studies of massively connected systems, the more time machines spend on their main task – hunting prime numbers or DNA patterns, for instance – and the less time chattering with each other about how they will compute, the faster they run. Winning protocols avoid this terrible inefficiency of translation because it can be spread across so much connection. In fact, the great breakthrough of computer systems in recent years has been the ability to handle massive amounts of data all at once, to maintain versions of information in a concurrent state many places in the world. This is the essential technical leap that permits compression of time. And it depends entirely on careful and gated design.

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[235] **The network scientists:** Rahul Tongia and Ernest J. Wilson III, "The Flipside of Metcalfe's Law", *International Journal of Communication 5* (2011), 665–681

To be inside a gated system is, then, really to be faster because of the slickness of communication that becomes possible. The very structure of the system accelerates that compression of time. This design feature of networks, in which winners take more and more, is why gates, and their careful use, will become the most dramatic lever for business, research or international politics in coming years. It also explains why our modern gates are different than older ones. Why it is so damn costly to leave them; why mastery of them is even more insanely lucrative than Cecil Rhodes' gold mines. Think of the old industrial age power games for a moment: Britain and Germany tried to match each other with their industrial output during their fatal competitive sprint 150 years ago; but imagine if network effects obtained? If Britain's initial head start in the industrial revolution had given them 90% global trade share? Germany would never have even tried to compete. They would have been the Friendster of the 20th Century: Isolated, slow-growing, powerless and finally consumed by the winning system.

5.

Networks crave gates. Once a billion people were connected together, of course there was going to be something like Facebook, a Gateland where they could link one to another in ever-thicker cascades of connection. Once everyone could record and watch and share videos, something like YouTube was inevitable. As we try to picture the world ahead of us, as we try to ask what tools of power we can acquire to twist this dangerous landscape into something we can manage and predict and control, we must ask of it: What does it want? The world wants a protocol for the fast exchange of money. It wants a basic language protocol. It wants a place to swap information about IT security holes. It wants instant translation systems to replace the need to learn to English or Chinese or Spanish so the world can move yet faster. I believe it wants certain sorts of alliances, a particular type of superpower and even craves a new form of politics. For any nation that controls these gates, there is a possibility to use that position to create still more gatekept platforms, to shape the protocols that tie platforms together in the way roads or jet planes link the physical world. This is the iron law of Gateland: Connectivity is power. Which means that gatekeeping is, at the end of the day, our most powerful point of a control.

It won't surprise you that, in recent years, for instance, the world has seen an acceleration in the construction of *physical* barriers, of fences and walls running between nations and defining and in and out. Roy Hassner and Jason Wittenberg, two American political scientists, scored out the pace of global wall building and found a sharp acceleration: In fact, of 51 national enclosures built since the end of World War Two – the Berlin Wall being the most famous example – more than half were constructed in a rush of self-protection between 2000 and 2014[236]. And more are coming: Hungary, Kenya, Algeria and India now posthole their borders in initial exploration of what might be built. There's a frantic urgency to some of this. The Spanish government, for instance, raised a ten-foot high, razor and camera topped fence around their Saharan footholds in 1998 – the enclosed land was controlled by Madrid, so it was technically "Europe," which made an irresistible target for would-be migrants. The fence wasn't enough to stop the flows. So they built a second one to run around the first in 2001. Then, in 2005, thousands of desperate Africans launched a coordinated charge against. A couple of dozen migrants died in the attempt; a thousand made it through. The Spanish responded with a third line of fence, this one 20 feet high, electic, camera-watched.

This pattern of ever more stacked defense is repeated everywhere. The walls, fences and trenches of the modern world seem to be getting longer, more ambitions, and better defended with each passing year, Hassner and Wittenberg concluded. Unlike traditional lines of defense, the Maginot Line or the Great Wall of China for instance, the aim of 21st century barriers in places like Israel or the US or Spanish Morocco have been less to stop a rolling armor *blitzkreig* than to slow the insidious movement of smugglers and spies and criminals, or the hopeful dashes of fleeing refugees. There's an affective and – to those on the inside – appealing asymmetry to these borders. They are mostly marked and built by richer, more modern, more stable nations desperate to control in and out. The creation of gates is, we should sense now, the corollary of connection. That they can sometimes be piled into the "winner take all" efficiencies Brian Arthur first teased out should give us a sense that there is a logic to this emergence.

Reviewing the problems of deadly disease contagion after the 2015 Ebola pandemic, Bill Gates examined this connection-and-gate lemma in the sharpest, most worrisome historical terms. "There is a significant chance that an epidemic of a substantially more infectious disease will occur sometime in the next 20 years," he wrote. "In fact, of all the things that could kill more than 10 million people around the world, the most likely is an epidemic stemming from either natural causes or bioterrorism."[237] This was the cost of a fast-moving, interconnected world. It was what floated free from the extension of Paul Virilio's line: Airplanes produced the airplane accident. Well, networks will produce the network accident. Many, in fact. A world primed for contagtion, Gates suggested, needs – and is missing – more and better gates. (Yes, here you can pause to double take at the serendipitously strange fact that the wealthiest citizen of our gated age is named Gates, just as the richest man in the era of pulling oil out of rocks was a "Rockefeller") Connection demands systems to gaze ceaselessly for the smallest sign of assault or need for change or accidental shimmering movement of danger. Part of what made the Ebola response successful is that the response really was in the form of gates as we've come to understand them here, not walls. Protocols for biological reaction, for medical care, for epidemic monitoring, the urgent helicoperting *in* of support and aid and ideas. The gates assembled around the Ebola pandemic were its solution. Had it merely been walled off it would have spiked, grown, mutated and finally escaped."The world," Gates wrote, "needs to build a warning and response system for outbreaks." This is true for all the outbreaks we face – whether they are disease or financial panic or terror. There will be, you can be sure, ignorant calls to build walls and not gates. This misses the point of networks. In an age of interconnection walls are nearly as dangerous as no walls. What matters is bulding topologies designed for gating, for milking power from the profound logic of networks we've seen at work.

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[236] **In fact**: Roy Hassner and Jason Wittenberg, "Barriers to Entry: Who Builds Fortified Boundaries and Why?" *International Security*, Vol. 40, No. 1 (Summer 2015), pp. 157–190

[237] **Reviewing the problem:** Bill Gates, "The Next Epidemic — Lessons from Ebola" *New England Journal of Medicine* 2015, April 9; 372:1381-1384

For decades after the 1929 financial crisis triggered an historic global depression, economists and politicians debated what had gone wrong. What had they missed? The world, it emerged, had been wired with an economic system designed rapid movement, but politicians and bankers had forgotten to put in the needed brakes. They had tried to run an industrial engine against the background of gasping political structures. Basic adjustment mechanisms – release valves for financial or currency pressures – had not been invented, refined or installed.[238] When we find ourselves in coming years gasping through some sort of financial crisis of our own, or running scared from a cascading military or social epidemic that slaps us unexpectedly, what do you think the most likely cause will be? It will be a failure of gates. Too few in some places; too damn many in others.

Remember the haunting, persistent vulnerability of our age. A twitch anywhere in the system can rock and even crack the whole edifice. Space Time Compression's ability to shrink distance to zero and time to an instant can turn anywhere, anytime into a battlefield or a spot for revolutionary innovation. Any moment can present us with questions of war and peace. Today we have no central theory of gatekeeping, no ideas about balancing inside and out. We fly on instincts, but they are the old industrial ones. Anyone can see a system that is full of holes and inconsistencies. Can you see a way through it, though? Pressed by political, technical and economic desire – to say nothing of the basic urge for self-preservation – more gates will be with us from now on.

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[238] **Basic adjustment:** Ben S. Bernanke, "Money, Gold, and the Great Depression", *H. Parker Willis Lecture in Economic Policy*, Washington and Lee University, Lexington, Virginia March 2, 2004

“Computer systems are, like many other things in engineering, constructed by composition,” computer researchers F.X. Lindner and Sandro Gaycken have written. That line, intended for switched-on digital systems, in fact fits most of our world. Nearly everything around us, from cities to telephone networks to refugee waves, are assembled by composition. Curriences are layered with encryption. Refugee dreams carved from photosharing and refined with GPS. Composition in this way breeds new vulnerabilities, new points of contact and this rather astonishing result, one we’re not prepared for in any sense: “In a composite system there is no critical gate,” Lindner and Gaycken explain. “Everything is a gate.”[239]

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[239] **“Everything is a gate”:** Lidner and Gaycken, p. 56

Chapter Ten:
Defense in Depth

In which gates, operated with our new instinct, become at once a tool of prosperity and survival.

If you walk for a few minutes to the south of Tinanmen Square in Beijing, leaving the tomb of Mao Zedong behind you, there's a small lane that runs back into a warren of anonymous, white-walled buildings. The streets are unusually clean; the surveillance cameras unusually – even for Beijing – dense. The neighborhood is home to many of the last of the generation of Communist Party cadres who joined and supported its rise decades ago. Several years ago, I found myself settled into one of them for an afternoon tea with Huang Hua, one of the great modern Chinese foreign policy figures – and a member of that early revolutionary generation. Huang was, in a sense, heir to the Warring States diplomat Su Qin, whom Master Nan had encouraged me to study. Huang had penetrated the madness of Mao's revolutionary era to see the possibility of a different order, one he'd brought to vivid life after Deng Xiaoping ascended to the Chinese leadership in 1976. Huang had been the country's Foreign Minister and later a Vice Premier. He was always calm, with an easy and relaxed temperament. One of my favorite images of him was from the mid-1970s when, while sitting on a flight to the US from Paris to take China's seat at the United Nations, he was ambushed by Walter Cronkite. Huang is completely unflustered in the scratchy video of that encounter. He sits quietly in a cloud of smoke. Cronkite pesters him. Huang smiles, offers a cigarette to the news crew, and though he is in the midst of a transit from the poverty, chaos and smashed politics of China he is nothing but serene, a statesman – not the nervous representative of a twitchy power.

"Do you know the difference between Western and Chinese thinking?" Huang asked that afternoon as we sat inside his courtyard house. Leaves were turning outside. He was in his early 90s then, still tack-sharp. "You see, when Chinese want to do something, we begin with the question: What is the nature of the age? Westerners begin with *the goal.* What do they aim to achieve?" Deng's foreign policy, one Huang shaped and executed, had been an excellent example. Mao, who ruled China from 1949 until 1976, had a darting, paranoid, murderously strategic temperament. The nature of his age, he was convinced in his Marx-addled mind, was one of *zhanzheng yu geming* – war and revolution. From this first principle, everything followed: He honeycombed Beijing with bomb-proof tunnels, relocated Chinese industry to isolated and gaspingly poor mountain strongholds, reacted to foreign ideas or influence with a snapping electricity – and was bent on protective isolation as he dragged the country through one impossible and failed isolationist development initiative after another.

Deng, when he came to power in 1977, read the nature of his age too. He read it differently. "There is no possibility of a great war. Don't be afraid of it, there is no risk of it," he assured a group of Chinese cadres during a chat in 1983. The cadres were having a hard time replacing their Maoist paranoia with confidence that China might safely open, develop, and change. They mixed the crouching nervousness of a secret political party with the vivid nightmares of a nation that had been invaded, abused – humiliated, they said – by nine countries since the mid-19th Century Opium Wars. "We used to worry about war and talk about its possibility every year," Deng told them. "It seems the worry was overdone." The world was, he felt, entering an era of *heping yu fazhan* – peace and development. Terrible, nation-demolishing wars would not soon victimize China, Deng thought. Nation *building* was the nature of the age. Its tools would be science, finance, and trade. If the Chinese people worked hard, he promised his incredulous listeners, they might by the year 2000 grow their thin $250 per capita income to the nearly unimaginable target of $1000. "I don't care if the cat is white or black," he famously observed, "as long as it catches mice." Socialism? Capitalism? No matter so long as it produced progress. Deng's judgment proved out. There were no major wars. Development was, for China, the name of the age. The cat caught $1000 dollars of per capita income nearly on the old man's schedule. It is still playing with the string.

There is something admirably direct about the Western way of problem solving, of course. *The shortest distance between two points is a straight line*. It has its uses. But it's also true that this sort of elementary geometry does not describe, always, the best path. Particularly not today, in an era when topological collapse or instant connection means that the distance from a to b can go to zero (or infinity) in a single sudden shift. Yes, you may be stringing a line from a to b, but if you're putting it up in a tornado? Is the best route to a new Middle East really the tipping over of stable states? Is the quickest path to climate control *voluntary* compacts? Are faster markets and more unwatched capitalism the safest way to ameliorate our unbalanced economics? Sometimes a more indirect line is called for. Sometimes it is faster, safer. Huang Hua's question – "Where is the world going, after all?" – turns out to be the first essential one for any endeavor. *If you are not looking from the highest possible altitude,* Chinese will warn you, *you are not seeing the full picture.*

The nature of our age has, I think, emerged clearly, vividly and broadly for us now. Constant, instant, everywhere connectivity taps with the efficient mercilessness of a steel hammer on the glass of most of our comfortable institutions. The Seventh Sense has let us understand a bit about the origins of this creative violence. And it has shown us too that our era's dominant feature is not merely cracking disruption, but also the construction of new orders. *Da po, Da li* the Chinese might say – great destruction *and* great construction. This is the nature of our age. Tap, tap, crack. And then: Gatelands – speed-bred by technology and filled with possibility. That some of these gated worlds contain billions of people or trillions of sensors, computer chips or network nodes only strengthens their inexorable grip. That they can be so easily or even accidentally weaponized marks the edginess of our problem. That they will be built atop the sharp-edged shards of a collapsing older system heightens the urgency at which they must emerge. To be inside, we've seen, delivers the light-speed benefits of time compression, of life on a nearly alive mesh. To be outside? It is to be cut off.

I said earlier that I wanted to lay the Seventh Sense onto the problems of war and peace and grand strategy – and while the insights our new instinct reveals are life-giving for business and eye-opening for culture, it's to the devious and unavoidable problem of global order I want to turn now. In a now-famous 1986 speech "You and Your Research", the Bell Labs scientist Richard Hamming set three questions for anyone embarked on the exploration of new ideas: "1. What are the most important problems in your field? 2. Are you working on one of them? 3. Why not?"[240] Well, the most important problem in the field of global affairs is the question of the future of world order, of how it will emerge – and what sort of aspect it may yet present. It is the problem to be working on. It also touches, like it or not, whatever the most important problem in *your* field is: Opening new markets, educating your kids, planning five years of corporate growth. Remember the distinction from earlier in the book, the difference between living at an ordinary moment and an historic one? The difference between Warsaw in 1539 and 1939? In one age, history is irrelevant; in the other it nearly throttles you. You can't avoid being touched. We live in an historic era, not least because the connections that define our age means epochal quakes in one part of the system will rattle other bits too.

A feeling for history – Nietzche's old "Sixth Sense" – should fire up invisibly in us bit now as we think about what life in an historic age might mean for us. The surprises in our news every day. The creaking of our old institutions. What do they augur? The political scientists Charles S. Gochman and Zeev Maoz once made a survey of history to see if they could spot just when the world slipped from calm moments to epochally unettled ones. They surveyed nearly 1,000 wars, big and small, hunting for patterns as you or I might look for trends in stock prices or sports scores. Increasing complexity, they discovered, almost always shook the world into conflict. States, armies, political groups, newly independent nations, ideological and religious forces emerge and then collide in their young energy, each driven by different aims and values and dreams. A cycle marks the process. First, disputes over small matters accelerate – as they are doing now. Everything seems open to question: Do you control this trade route? Who says we have to respect this arms limit? The combined pressure of so many simultaneous disagreements announces a shift in the pattern of all relations. A logical loop follows: "The frequency of disputes," Gochman and Moaz explain, "appears to be an early indicator of system transformation…The rise in the number of disputes seems to indicate a decline in the degree of consensus on the 'rules' of the international order. This heightened dissensus (often culminating in large-scale wars) is followed by restructuring."[241] Pressure on the rules. Small cracks. Large scale war. Re-ordering. Like water moving from ice to liquid to steam and back, this cycle has a predictable logic. It ran in the age of Bismarck and culminated in World War One. It spun again in the age *between* last century's great wars too, tripping into a second World War. And it ran as well in the fracturing of ancient China during the Spring and Autumn era or in the Roman Empire in the age of the Caesars. Our current shifting – that tap, tap on every nation's politics, media, and economics – isn't really so unpredictable after all. [242]

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[240] **"What are":** Richard Hamming, "You and Your Research", *Simula Research Laboratory* (Berlin: Springer-Verlag, 2010) Chapter 6

[241] **The politial scientists:** Charles S. Gochman and Zeev Maoz, "Militarized Interstate Disputes, 1816-1976: Procedures, Patterns, and Insights", The Journal of Conflict Resolution, Vol. 28, No. 4 (Dec., 1984), pp. 585-616

You may know the old saw of military parade evaluation: That the more magnificent a nation's uniforms are the weaker it's army usually is. But the gold-braided admirals of some three-ship navy reflect a very human need for security, and particularly for a self-decided *feeling* of security. Every nation has it's own foreign affairs aims. Each cherishes a certain national image, memories of military glory and of "interests" inseparable from culture or identity. The goals of the French and the Turks, for instance, each evoke an encyclopedia of history, tradition and politics. Uneasiness in Paris about capitalism and immigration, for instance; or Anrka's worry about ethnic division, fundamentalisms, and the creeping nuclear progress of their neighbors. Our era's revolutionary logic will shape choices in every nation differently. But I'd like here to discuss American foreign policy. America plays a central role in world order now. The country's leading position makes her, to some degree, an unavoidable gatekeeper. In the Napoleonic era, nearly every revolution or war could be tied to energies emanating from Paris. During the Cold War most puzzles of politics or geography might be framed in terms of a zero-sum competition with the USSR. In our own age, we'll find most every problem links to networks and their new logic. And – for now at least – to America. Thomas Paine's memorable 250 year-old assessment, that "The cause of America is the cause of all mankind," touches this linked universalism in a way he never could have imagined. "Betweeness" or "Centrality" are the way network science labels and measures such a role. Just how essential is a certain nation or trading platform or point? The networks of America won't, in the future, be the only networks. They will be less "between". But they will be, always and indelibly, the first reference for design.

If the traditional aim of American foreign policy was to prevent the emergence of a challenger that threatened the country directly, or that might fence off and manipulate Asia or Europe or Latin America against Washington's aims, the concern now is different: Mastery of topological destiny. There are those who observe, as an American think tank noted in 2015, "Today the United States faces no existential threat."[243] This is wrong. The emergence and shape of networks is just such a danger. Security, the great foreign policy theorist Andre Wolfers once wrote, is "the absence of threats to acquired values."[244] The networks around us, as we've seen, are demolishing older values. Often because we want them to. Any revolutionary technology unbuttons an older order this way. But we now approach this destabilized world with a sort of wideyed panic. Control terrorism, manage climate change, lock in great-state peace. So many desires scatter our minds and when we fail to achieve them they erode our will. Here is a basic lesson of accomplishment in any human domain: Better for us to focus on a single aim, and tighten our efforts around that one aim and use success to strengthen our will. The answer to the great, newly-charged existential question of politics – "Are you a gatekeeper or the gatekept?" – is not yet decided for the United States. So, strategy first: We live in a connected age where power is sliding into that gated order we've learned about. America's role? Not to make the entire world democratic. Not to try to bomb or force stability onto every nation now collapsing under network pressures. Not to passively wait for our version of history to "win". Not to thwart the rise of other countries. No. The strategy that fits the nature of our age and position is to perfect and then operate the essential, topological mechanisms of power now. Sometimes with warm humanity; other times with the ruthlessness demanded by the touch of danger and evil. This involves gates. It involves firmness and nerve and willpower. It demands what we might call Hard Gatekeeping.

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[242] **Our current shifting:** See also Lars-Erik Cederman, T. Camber Warren, and Didier Sornette, "Testing Clausewitz: Nationalism, Mass Mobilization, and the Severity of War" *International Organization* 65, Fall 2011, pp 605–38

[243] **"America faces no existential threat":** See James Dobbins, et al. *Choices for America in a Turbulent World* (Santa Monica: RAND Corporation, 2015) xiv

[244] **In his classic essay:** Andre Wolfers, "'National Security' as an ambigious symbol'", *Political Science Quarterly,* 67 (1952) 485

2.

Everything around us now is or soon will be connected. Access to our trade, the use of technology and networks, our defense or our currency – all of these must be considered as gated systems. Each will come to throb with new power as a result of their links, as a byproduct of their escalating sensitivity, intelligence and power, and from that in-or-out distinction. Much remains to be instantly, fully linked in this way. Our education. Our medicine. Our military. Real-time information, sensors and machine intelligence will erect Gatelands in each of these areas and in others. These walls will go up even faster than real-world berms and fences. The strategic position of any nation or terror group or business is not going to be secured by industrial measures. No one at Google wants to build a newspaper. No one in Al-Qaeda is trying to float an aircraft carrier. Rather, it will be determined in the construction of new tools, which largely means the building of a new, gated order.

"Every new age and every new epoch in the coexistence of peoples," the historian Carl Schmitt once wrote, "is founded on new spatial divisions, new enclosures, and new spatial orders of the earth." Schmitt was contemplating history: The great Mediterranean empires and the long, millennial power trails of Asian chieftains. But his insight touches every age, our own included. To make a nation, to build an empire, is to draw lines, to push at borders, to smash at gates. Some of this is the wild martial ambition of a Napoleon or Hitler (who Schmitt unwisely advised); often it is simple protection. Lord Balfour, serving as Foreign Secretary, contemplated this problem from his imperial vantage in 1918 and observed: "Every time I come to a discussion – an intervals of say, five years – I find there is a new sphere we have got to guard," he wrote. "Those gateways are getting further and further away from India, I don't know how far west they are going to be brought by the General Staff."[245] This problem of where exactly to put the gates confronts us now as well.

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[245] **"Those gateways":** Quoted in Robert Jervis, "Cooperation Under the Security Dilemma", *World Politics* Vol 30, Issue 2 (Jan, 1978) p. 169

Gatekeeping, as we've seen, isn't simply the act of marking geographic lines. Those hurrying walls and berms and triple-fences of the real world are a kind of gatekeeping but they are also, I'm pretty sure, expressions of a deeper desire. Each is a real-world defense against topological pressures of population and ideology and violence, all shaped by network magnetism. The likely futility of such gates is clear enough when you contemplate the forces they are intended to keep out: Refugees see prosperity miles on their phones. Little wonder they rush at it. Internet-transmitted messages light up ideologies, protests or fundamentalisms that pull people back and forth endlessly across physical borders. The world responds, as anyone without a Seventh Sense might, with walls. But to focus merely on the physical? This is to misread the issue. Gatekeeping includes real-world borders, of course, but the statesmen of the future will act particularly on topologies. They will work not merely to stop up flows, but to decide their movement. Gates will, for instance, serve as bespoke disease buffers, created to track and then freeze the worrisome pandemics now crawling at us on the connections of our age. Other gates will be economic tools: The will help isolate and then soothe the unstable and apparently broken, middle-class eroding financial patterns of the past decades.

Recall how the design of computer or network systems affects the real world, like a marble slipped under a carpet? Gatekeeping's topological design is like placing marbles (or boulders) in particular ways, to direct movements and flows as you might guide water with a canal. The great historian Arnold Toynbee once recalled a passing moment with British Prime Minister Lloyd George during the endless (and disastrous) Paris Peace Conference of 1919. "Lloyd George, to my delight, had forgotten my presence," Toynbee wrote, "and began to think aloud. 'Mesopotamia…yes…oil…irrigation…we must have Mesopotamia; Palestine…yes… the Holy Land… Zionism… we must have Palestine…; Syria… h'm… what is there in Syria? Let the French have that."[246] This sort of charmless arrogance – *The Holy Land….We must have that* – doesn't much suit our age, but that comprehensive view? What oil and irrigation and Suez were to Lloyd George, emergence and data flows and gates are to us. There's a crucial difference, however: We need not take the most precious territory of our age through invasion or colonial exploitation or in mis-balanced peace settlements. We can build the essential landscape of power. We can build it for defense. And then we can grow it, perfect it, and attract others. Schmitt was right, human history is the story of enclosures – and nothing about our emerging age suggests any other approach can, with a single clear line, solve the vexing *network x network x weapons* problems we face. Hard Gatekeeping means molding the landscape, gate by gate, to encourage certain movements and make others difficult, costly, maybe even impossible. Any future order must begin with this first principle: The line between in and out is as essential as what goes on inside.

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[246] **Lloyd George**: Margaret MacMillan, *Paris 1919: Six Months that Changed the World*, (New York: Random House, 2002) p. 381

The goals of Hard Gatekeeping are simple enough to state: To protect those inside the gated order, to make security and innovation more efficient, to accelerate certain kinds of connection and dampen others, to manage vulnerable links to the non-gatekept world and – perhaps most important– to use that "in or out" leverage to relentlessly affect the interests and plans of others. These aims are the root of real security in any age. "In anarchy, security is the highest end," Kenneth Waltz wrote. "Only if survival is assured can states seek other goals such as tranquility, profit and power."[247] Survival – and Waltz's other essential aims – will be decided by the nature of our future connection. In this sense, Hard Gatekeeping produces a decisive change in our posture. It lets us aim *for* something instead of merely being against movement or – hopelessly – against the future. It establishes priorities, clarifies our real core interests, helps us budget our effort and our expenses – better, perhaps, to spend a trillon dollars building tools of topological mastery like infrastructure or new technology than chasing Middle East peace.[248] Gatekeeping does not transcend the long-standing debates between the cold realism of Stalin and the idealism of Woodrow Wilson so much as it sets us a preliminary task: Shaping the environment. To build and control the next generation of gatekept systems should be our aim now. In the future paper currency wil be replaced by secure digital bit transactions. Genetic information will demand smart, live-connected platforms for efficient mining and study. Cyber and biological security will each come to be defined by high-speed, machine-intelligent protocols. All of these are gatekept cores. Mastering them will be as important as having military bases, trade missions or treaty arrangements once was. The development of such systems plays to our strengths; they deliver both security and useful pressures of innovation. Remember – the aim isn't to build walls. It is to use the logic of networks and gates, and all the complex productive force they release.

3.

The elements of Hard Gatekeeping can be stated simply enough:

First, *Does it work for us?* We seek a landscape of technology, trade, finance, knowledge – all the tools of power – that balances the pressures of politics with a colder grasp of longer-term national interest. The protocols, alliances, treaties and data webs that enable markets, trade or thinking machines – all are gatelands we can cultivate, improve and protect. Our gatelands must be designed to limit the rippling risks of contagion or error moving wildly, like spring weather, inside linked complex systems now. Control of topologies is what air superiority or sea mastery once were. The opening attacks of future wars will come invisibly and silently through networks, in space, in fast topological strikes – not with noisy land invasions or bombing runs. Well-built gates will give us time and leverage. They will deliver the honestly-earned confidence of the secure. They will provide purchase for the patient work of diplomacy, a marked shift from the crisis-to-crisis lurching of today.

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[247] **"In anarchy":** Kenneth Waltz, *Theory of International Politics,* (Reading, MA: Addison-Wesley, 1979), 126

[248] **It establishes:** For a discussion about why a grand strategy is of practical use see Hal Brands, "The Promise and Pitfalls of Grand Strategy*," Strategic Studies Institute, External Associates Monograph Program*, 2012

The texture of our values should be everywhere woven into these gatelands we will cultivate: Democratic choice, freedom of thought, privacy. We won't have time for leisurely deliberation about ideals in the crashing, time-compacted crises ahead, so we should begin with them. Let other nations measure gated enclosures for their different values, marked by their paranoias and historical burdens; our strength will be an order that reflects our habits of civilization. The curious, open-minded searching native to our temperament, for instance. This will force constant innovation and evolution, an antidote to the failure to change that poisons most closed systems. A continued absence of gates will undo us in the short run. But the long run will be a disaster if our gates are inflexible, too closed, incapable of upgrade or – worse – girded by promises and fears that are not naturally our own.

A second principle is that we ought not force anyone else to use our gated systems. *Gatekeeper or gatekept?* No more profound, painful, liberating or enslaving political choice now exists. Nations must be free to select, in as much as they can, their own terms of enmeshment. Our aim should simply be to build the best order we can. America's tremendous economic and technical lead serves us – for now, at least – as the isolating stretch of the Atlantic and Pacific once did. There's no need to force others to follow us. Recall Greshams' famous "economic law": The way in which the bad drives out the good. A stock market made of swindlers won't attract investors for very long. Well, in many networks, a sort of reverse-Gersham's law applied. The good drives out the bad. By this I don't mean merely the self-cleaning properties of systems like Wikipedia. But of linked systems more broadly. If one nation runs a DNA database where results are skewed by rules of political power – family members of leaders get special access for instance – it will make it less effective, and therefore less appealing as a gateland. So we should be relaxed about letting Europe or Russia or China try their own gated systems. Their desires reflect sensible, understandable urges. If you were leading a nation would you rely on Washington's trade or financial commitments? Because of the nature of power now many nations may have no other choice; but forcing them to enmeshment could bring shattering, unnecessary pressure. Let them divide themselves from us; it will only weaken them.

We need not evangelize, invade, or compel our way to power. Consider the case of global trade. For decades after World War Two, many nations sought independence from economic entanglement. They yearned for autarky. They scorned trade. And they nearly bankrupted themselves in the process: Want to buy Portuguese cars? French computers? Indian bikinis? I didn't think so. The whole point of trade was to solve such imbalances of skill and trade. When the age of connection began after the Cold War, most countries made a decisive shift: They arranged their economies to be attractive to global financial flows. Trade grew twice as fast as the world economy. The cost of being left out was, and is, a nearly impossible burden. American systems, if they work for America, should have the same magnetic appeal, the power-law dynamics Brian Arthur found in the most successful network arrangements. Getting it right is enough of a task. If we can manage that, what we build will run with unimpeachable legitimacy. Chosen, not forced.

A third principle is that our gates and protocols and webs ought to be open to others, but with each new link weighed, added to the scale of strategic balance with exacting care. An overarching, systemic view should inform us. Nations that want to use our cyber security systems, for instance, should join research cooperatives – and possibly shoulder as well some problems of global network health like the implementation of IPv6 or DNSSEC, or any of the future jointly secur standars that will emerge. They should even – here is where the leap comes – be required to cooperate on nuclear proliferation, cybercrime, or trade norms. The puzzle here is clear: How to use our strengths to address our dangers? While we can't directly press our lead in cancer research to stop national flirtations with nuclear bombs or cyber crime, it's probably true that a cost of weapons proliferation should be exclusion from life-giving technical and trade and other gated orders. Remember that feature of network systems now, how the cost of exclusion grows even faster than the benefits of inclusion? If the aim of any society in this connected age is to accelerate the compression of time for its citizens, than life outside the best gates for this will be a nearly fatal political cost. Do you really want to rely on French computers? Wear Indian bikinis? Do Iranians want to rely on Iranian cyber-security tools alone? It is ever-easier for citizens of nations sliced free from vital networks to feel what they *don't* have.

The courage to leave some nations out of the order we're constructing – and to cut others out – doesn't come easily to us. Today we don't really engage in a comprehensive, linked strategy. Iranian proliferation and Chinese finance and Saudi military support are, for all practical purposes, separated in our contemplation of the world. Hard Gatekeeping frames these together as a piece; it spots the topological string running between each and gives us a firm position from which to pull the threads we want. We will come to know, to pay, the costs of over-inclusion. But this also means that we must be concerned with the security and safety of others, on our network or on others. To attempt to achieve absolute American security, to do so at the expense of other nations – this will not only erode the credibility of any system we build. It will also make them fundamentally less effective. We are, after all, what we are conneted to.

Fourth, no nation should be permitted to force another inside of its own gates. India might develop a great search engine; they should not be allowed to force Bangladeshis to use it. China may develop clever trade channels to Europe; they should not drive their use with military pressure. This principle is the flip side of our own commitment not to compel others into American gatekept systems. It represents an important nod to sovereign power: Each nation decides on its own. If we're intent on avoiding some of the chaos of the last major system change, which produced the Thirty Years War, we should learn its lessons. That fight fundamentally touched on one question: Who decides what happens inside a country? The specific problem of Europe 350 years ago was if each King could decide the religion of his state. The treaties that settled this debate in 1648 – after the most devastating wars in European history at that time – established *Cuius regio, eius religio* as the governing principle. Whose realm, whose religion. The very notion of a "state" is itself being eroded as topologies, migrations, and superfast data links eat at old borders. But nations remain an essential container of power. A rapid collapse of that system would be a disaster, and is frankly unlikely. To be American. French. Chinese. This still matters.

Do we demand that other nations use our protocols? Do we force China or Germany to rules of transparency, data tracking of their citizens and research that we obey? No. *Cuius reticulum, eius reticulum.* Whose realm, whose network. But, at the same time, should we permit China or Germany to force another nation into its trading regime? It's biological or cyber networks? To the question, "What would America fight *against* in a gatekept world?" one answer is this: We would resist any attempt to force-fit a nation to a gated order. We should prepare for difficult, expensive fights to maintain this principle. Russia watching neighboring states seduced into a Chinese trading order or an American technological system won't bubble with silent acquiescence. Arrangements that tilt trade to one side of the Pacific will unnerve China or Japan – or the US. But, in the end, the control logic of *cuius reticulum* buffers us, as a sort of law, against a wilder madness of collapsed nations.

Fifth, we should not permit the emergence of any means to destroy our system. The very efficiency of connected architectures makes them vulnerable. Networks, by design, have holes that particular modes of attack can exploit. Contagion. Strikes against central nodes.[249] Arms racing of a certain type. Our first attempt to limit risk should be defensive. Better gates. But we'd be foolish to stop there. Gates, the Trojans would remind us, are not enough. When truly existential dangers emerge – nuclear weapons, certain types of artificial intelligence or genetic engineering – then we must attack. Hard Gatekeeping should include a coiled, prepared readiness to strike with the same light-speed movement that defines the dangers we fear. Of course we should try to deter such attacks. But we should be realistic. There's much we can't deter. And the cost of attack is awfully cheap. We won't be truly safe without battle plans and diplomatic gambits that can hammer at the topological and real world vulnerabilities of our enemies. After all, they will be hammering on ours.

Our defense task is simple to say, hard to achieve: From the largest symmetrical superpower in history, America needs to become the greatest asymmetrical one – capable of devastating, instant action anywhere in the real or topological world. Network scientists who study the power of "centrality" have shown the way that certain positions in a topology – think of a rainforest, a travel network or a stock exchange – wield unusual influence. Centrality of a certain node in linked systems can determine control, it can produce "super spreaders" which instantly shape linked topologies[250]. Contagions, panics, economic brain freezes – these are the essential tactics of our future. The maintenance of our centrality on the topologies we rely on is, then, the essential part of our future security. Interrupting this is, of course, exactly the edge our enemies seek against us: To infect us – with panic, terror or some virtual or real virus. To alter the landscape with one sharp razor slice, not a hail of bombs.

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[249] **Strikes against:** I.A. Kovacs, A-L. Barabasi, "Destruction Perfected," *Nature (News & Views)* 2015, 524, 38-39

There is no excuse for us to not prepare to struggle in these new terms. Our military must be shifted for the demands of such instant, cross-space attack. But it's more than that. In recent years America has gotten into a habit of reaching for our military tool, and while we've strengthened it to an historically unprecedented degree, we've let other skills atrophy. Our real aim should be to stop our opponents from adapting, evolving and connecting to us. If we suffer some strategic, nation-crippling defeat in the future, I don't think it will be because our military was weak. Rather it will be because we've not mastered all the other tools of topological control. The first sign of our real awarness of this will be when the old, foolishly vulnerable systems and tactics and ideas are replaced. We should never build another aircraft carrier without a sense of new, networked naval plan. The idea of spending hundreds of billions for manned bomber planes is absurd. We should embrace self-imposed limits, we should force ourselves to innovate both with our military and in the creation of new tools of policy. Doing so will prevent any number of conflicts. And it will stiffen our temperament to unconventional thinking.

There's a lean efficiency to these five principles that define Hard Gatekeeping. The strategy echoes, in its clarity, in its clean frugality, the postures of some of the most enduring orders in human history: The "defense in depth" of the Roman Empire, for instance. The protective order of Tokugawa Japan. The walls of Tang China, part of a chained national history that celebrates heroes as "defenders of the nation," not attackers. Gatekeeping resists unnecessary profligacy. It limits the need to proselytize or colonize or force others to our way of thinking. And it has a universal aspect: Hard Gatekeeping can – with a little imagination and some discipline – be laid on puzzles like terrorism, cyberattacks, US-China relations, order in the Middle East, the proliferation of nuclear weapons, income inequality and global warming. It provides a sharp single image of what we're after – and guidelines for getting there. It's clear enough what we need to do, I think. Build gates. Use them. Hold inside them and protect the curious, innovative and revolutionary spirit of our people and our age.

4.

Let's use this approach to examine some particular problems, and let's start with US-China ties – a puzzle whose resolution may be the decisive act of policy in the next century. How might Huang Hua, with his *nature-of-the-age* consideration of strategy have regarded the matter? What does gatekeeping tell us?

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[250] **Super spreaders:** Manlio De Domenico, Albert Sole´-Ribalta, Elisa Omodei, Sergio Gomez & Alex Arenas, "Ranking in Interconnected Multilayer Networks Reveals Versatile Nodes", *Nature Communications* April 23, 2015

The dominant view of future relations between Americans and Chinese generally runs along a nervously familiar historical track: An established power (the US) and a rising one (China) consider each other. Do they cooperate? Scratch at each other in constant annoyance? Each nation possesses a different image the world. Each holds, as well, distinct pictures of their role. One power has enjoyed a long period of prosperity, has built and defended a global structure; the other, trod mercilessly underfoot by history, feels the unbearable flow of power's rising sap, a hunger for recognition and release and for some, revenge; her economy craves resources, trade routes, and markets. So Germany encountered and then attacked Great Britain at the turn of the 20th Century. Japan collided, similarly, with Russia in 1904. France taking on Austria, Russia and Great Britain in the Napoleonic age.

Even if the leaders of the United States and China intend to avoid conflict, they face one of the most sobering, if not depressing, problems of international politics: The "security dilemma". The world is a dangerous place. So countries do things to feel safer. Their populations demand it. Germany looks at Britain's imperial navy in the 1890s: London could snap Berlin's trade arteries. So the Kaiser orders two battleships. Britain builds three in response. Germany turns to submarines. And so on. Each country, chasing her own security, ends up *less* secure. This is the "dilemma". The puzzle is like one of those woven wicker finger traps: The harder each side pulls to get out, the more stuck they become. America in 2012 pivots her military gaze to Asia. China feels encircled. She orders a couple of aircraft carriers, paves remote islands into military bases. America flies aircraft closer to Chinese waters. Are the two sides more secure? Collisions, arms racing, accelerating distrust become the threnody of contacts. Each side seeks something impossible: Perfect security. *Move first*, certain forces begin to whisper in each capital.

The essence of this problem today, as the United States and China consider their future, is not merely or even mainly in the details of trade, territory, or cyber disputes we read about. These hot points are important, of course, but they are symptoms of differing judgments of the world, of a fracture at that first step of asking, "What is the nature of the age?" Americans generally believe the existing global power map is just, sustainable, in need – perhaps – of minor adjustments. America engineered this system; benefits tremendously from it's fictionless operation. China regards that same layout differently. As broken, unbalanced, rocking towards a seizure – and, anyhow, built, lubricated and run without her participation. This view is sharpened by ideology, national psychology and the bald fact that no global mechanism ever functions perfectly. The larger nature of the age is, many in Beijing feel, *Da po, Da li.* Great destruction. Great construction. Certainly this is true *inside* China; it must be true outside. The nation has it's hammers out. They see the paradoxes of power we read about earlier, the inability to act and the collapse of American credibility, as clearly as people in Washington or Damascus or Moscow. Surely the global system should be adjusted, they think. Tap. Tap.

So though no inherent enmity exists between the two countries, a crack emerges. Each side finds reasons not to cooperate. A shared interest in peace – neither side wants a collision, both understand the costs – is shimmied apart by a perception gap. Cultural, historical, temperamental and ideological differences accelerate the unzipping of even the best intentions. Misunderstanding bends and then snaps irrevocably into mistrust. So yes, the recovered islands and the trade tensions and the political theories have to be managed because each is a blister that limits forward motion – but the real source of friction? It is the scraping of different world views. This is *deep* strategic misalignment. It is, in fact, the stuff of war.

In recent years, America has had two different, nearly opposite approaches to China, each however marked by an assured national confidence that the current world order is sustainable. One policy is short-handed as "engagement" – or, colloquially, "panda hugging." As China becomes more prosperous, this approach suggests, she will become more congenial to American interests. More cuddly. This was, for some, the basis for bringing China into the World Trade Organization in the 1990s. Later it justified deep commercial links and educational ties. The logic of such an approach fit the mindset of many baby-boomer Americans: China's attraction to MTV, McDonalds and Mercedes hinted at a still deeper desire they thought. To be Western. China's citizens would surely become more attracted and committed to the world system that had delivered all this prosperity. The country would become more global, in a sense, and *less* Chinese.

In fact, as China has grown in recent years she has become more global and *more* Chinese. Growth, wealth, an admixture of confidence into the old national habit of insecurity – all of these have encouraged a searching exploration. The demands of domestic politics, the instincts of the Chinese Communist Party and the inevitable practical questions of security and reform all produce sensible questions. China needs oil, for instance. Must she project power into the Middle East? Control the sea lanes of the Malacca Straits? There's no natural, inherent resistance to American interests in any one problem, but that hopeful American logic of "engagement" ignores much about China's essence. The country presses at rules she mistrusts (as America once did). She struggles with the inevitable challenges of a political system still smoking a bit from recent revolutions – and, of course, facing the pressures of a networked age. But she holds, strongly, a sense of Chineseness. Can we honestly expect to use mere prosperity to change China in a predictable, pro-American way? "Engagement" feels to Chinese like a demand to become more American. That prospect is as appealing as a request to become more Chinese would be for Americans.

An alterative strategy to "engagment" is known as "containment". (While not formally called "Panda Kicking", this is often what this policy looks like.) This view takes it for granted that as China becomes more powerful she will become a threat. Any growth in Chinese power means a decline in America's influence and security. A stronger China in Asia, for instance, means a weaker America. Countries like Japan or Korea or the Philippines will be required to choose a side at some point, at some awful 21st Century Melian moment. The aim of containment is to squelch China before such a fork appears. This approach, too, has its logical problems. Boxing the largest economy in the world hardly seems sensible – and is likely not achievable. Anyhow, early attempts to do so have shown how little leverage the US has. When China announced plans to build an Asian Investment and Infrastructure Bank in 2014, the US opposed it and then watched as nearly all of Washington's traditional allies raced to join.

At the same time, China's policy towards the US has been hard to decipher for many: Is the country intent on amity or enmity? It's clear enough that the American options presented to Beijing are unappetizing: Change or be contained. Messages by China in response have tickled the natural historical pessimism of American political leaders. China speaks of wanting a new kind of relations with America, of cultivating rich technological and financial ties, but the country at the same moment challenges easy assumptions about how foreign investment, educational or security cooperation might mesh together like gears of friendly progress. It's hard to do business in the Mainland. The military grows with astonishing speed. Domestic habits of smash-mouth competition rattle at more sedate Western habits. Any element of China's actions are explainable and even sensible when seen with sympathetic eyes – but the same exact facts can be stitched into a story that suggests constant damage to American interests. China's position is, to be honest, a difficult one: The country is opaque to most foreigners, wrapped in habits and instincts that run along such different lines that even simple daily decisions – how to run a meeting, for example – can be a source of disagreement. *In the west you prize diamonds for their clarity,* Chinese will say, *in China we prize jade because it is cloudy.* There's a charm in opacity; even a bit of sensible political magic at times. But China is moving out into the world very rapidly, now: Fast and dimly understood don't fuse into easy trust.

In one sense, then, it's possible to sense the tense, angry energy of an impending collision. Beijing and Washington are enacting the old historical pattern. Wrestling for years over small issues, never quite coming to grips, slowly pulling at each other until a final, fatal collapse. Germany and Great Britain, all over again. But: *Connection changes the nature of an object.* So much in our world looks different after connected dynamics are applied. Might connection change the nature of enmity? We are, after all, part of the same connected skein. We've concluded that America's greatest threat is not China or Russia or terrorism – but the evolution of the network itself. That same topological evolution menaces Beijing too. If China is not our biggest enemy, if we are not theirs – what might be developed? Might the rat trap of history remain unsprung?

An American "China Policy" shouldn't be regarded as some distinct initiative; rather it must be a part of a grand strategic program of Hard Gatekeeping. Our goal aim isn't some shimmeringly perfect "China Policy" so much as it is to cultivate a grand strategic disposition that informs what we undertake in cyber, Russia, the Middle East, and China. Imagine we had a terrific "China policy" and a backfiring "Nuclear weapons policy"? Masterful grand strategy is marked by a comprehensive elegance. Metternich's old construction, "A Concert of Nations" tells the story pretty well: A symphonic effort, each note and instrument in place. Grand strategy tells us what to do at every moment.

Any policy, then, must begin with a summary of our aims: "We believe the world is entering a period of profound change that demands a shift in global arrangements. We are building a gatekept order consistent with our values. We welcome others to participate in it – but with conditions. We will resist attempts to force nations into any gatekept order; we will fight any forces that threaten disruption of the overall system." The China policy that emerges from this view is clear enough: We will not contain China. We will not force China to change. Rather we will develop a profound gatekept network for our own operation, one that layers together all the concerns of economics, trade, security and technology – as if we were designing a technical system for fast, constant links. We will include other nations that want to be a part of it, as long as they are willing to bear certain costs. China is welcome to develop her own system and see whom she might attract inside. She will not be permitted to compel nations to join. And: If China wants the benefits of a US-led order, then Beijing must be prepared to support the maintenance of that order. That means deeper cooperation on everything from nuclear proliferation to the establishment of new international bodies for connected finance, biological research or nuclear de-proliferation.

Such an approach resolves, in an instant, the contradictions of our current policy. *Here is our gated order*, we can say, *join if you wish and on the terms we both consider best.* We should remember: China has much to worry about. Disorder would land on her own hopes for peace and development with a profound, possibly crushing pressure. The international order is not working as well as it might. It does not appear engineered for new stresses. It is in cooperation for the reform of that system that the two nations share an urgent interest. And it is in a successful defensive posture of a gatekept, network order that Washington can cultivate the linked, leveraged moves that will encourage this to happen. While there might be a temptation to play this game in that old Lloyd George sort of way – "We need the Middle East. Grab it. We need digital currency mastery. Take it!" – such efforts will only assure final, fatal collision between the two powers. We need a gatekept order. Build it. That is enough.

What the Seventh Sense statesman sees, in the way a Seventh Sense entrepreneur or terrorist or researcher can, is the pulsing network logic that is at work breeding a new world – like it or not. And our policy has to aim for that future state, not for what we have today. If this sounds difficult, you should know that in most complex adaptive systems these kinds of adjustments frequently occur. Rainforests. Traffic jams. The human brain. Anyplace connections are knit and reknit at light speed can exhibit a pattern of rapid redevelopment: The world changes. The network and its various pieces hum, in response, to a new order. Climate shift in the Amazon, for instance, produces drier air. The pollination cycle shortens. Flowers must adjust by growing longer leaves to protect their moisture. Birds that rely on the flowers develop longer, sharper beaks in response. In this way bird and flower each become better suited to a warmer age. They *co-evolve.* We see this sort of interaction in many worlds. Data companies face increasing bandwith demands. They develop new ways to transmit video. Application developers create fresh tools to compress their signals. The whole system gets faster. Such co-evolution is common when linked systems press into one another.[251]

If you look back at biological history, at our planet's seething life at it's most profound moments of transition, you find co-evolution in nearly every case. The biologists John Maynard Smith and Eors Szathmary, in their masterwork *The Major Transitions in Evolution*, chronicle the miraculous march of life towards ever-greater complexity – from cells to humans to societies – as a story of ceaseless, successful co-evolution. "Complexity is hard to define or to measure," they write. "But there is surely some sense in which elephants and oak trees are more complex than bacteria, and bacteria than the first replicating molecules." The essential, facilitating feature of our biological hop-scotch from mitochondrial snot to Beethoven sonatas has been an ability to change together, not merely to compete. While we humans tend to consider evolution in murderous you win/I lose Darwinian terms, the biological world around us seethes with a more nuanced logic: Cooperation is every bit as important to survival.

Smith and Szathmary identified eight major transitions in their work – the evolution from single cell to multiple cell organisms, for instance. And in each case they find a kind of cooperative, co-evolving logic serving a catalyst to survival. "The applicability of the concept," Smith and Szathmary conclude, "extends across the whole of social and natural sciences." Inside cells. In ecosystem webs of coral or rainforest. In traffic management. Successful evolution was, they found, always *co-evolution.* "It should need little persuasion to acknowledge that links we make with others change in time," they wrote. "That all of us age, that our roles in life evolve, and that the society we are a part of may itself be subject to transformations on a global scale. Coevolutionary rules aim to integrate these processes." The world changes. I change. You change.

Network age systems, in their effortless bridging of divisions – geographical, technical, commercial – bounce with a particularly powerful fusion. "It is often assumed that biological agents are by nature rationally selfish, and that therefore external circumstances somehow have to compel them to cooperate," the historians Nathale Mezza-Garcia, Tom Froese and Nelson Fernadez have written about the organization of societies over the past millennia. That sense we often have, that we're one Darwinian instant from some sort of lethal, teeth-baring competition, doesn't in fact explain all of human history. [253] Politics is a sort of complex adaptive system; it fuses cooperation with brutal competition as it aims for a kind of equilibrium. After all, if we were constantly tearing into one another, we'd be extinct, not evolved. Why did cities form? Nations? The key is a moment when shared, possibly devastating risk of collective failure becomes apparent – those moments when the whole system threatens to collapse right on top of all the participants. The greater the shared danger, Mezza-Garcia and her colleagues explain, the better the chance for real cooperation. It's a forumula that fits what we face now: "An increased risk of collective failure facilitates large-scale cooperation, especially when the large scale system is composed of smaller, nested groups," They explain. ""Complex systems theory reveals an alternative to constant conflict."

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[251] **Such co-evolution**: Matjaz Perca, Attila Szolnokib, "Coevolutionary games—A mini review", *Biosystems* 99 (2010) 109-125

[253] **"It is often assumed"**: Nathalie Mezza-Garcia, Tom Froese and Nelson Fernández, "Reflections on the Complexity of Ancient Social Heterarchies: Toward New Models of Social Self-Organization in Pre-Hispanic Colombia" in *Journal of Sociocybernetics* 12 (2014), pp. 3 - 17

This is our world now: Linked clusters of markets, nations, machines – all exposed to a risk of shared and instant collective failure. Such a structure upends an axiom of politics that has run for centuries: Man is purely Darwinian and that survival is determined by constant competition alone. In a network, survival is determined by sociability, by cooperation. Linked systems drive people to agree on rules in order to participate, which accelerates change and co-evolution. Smart cancer databases, linked traffic systems, video platforms like YouTube – each are Gatelands that press users together on a single platform, one that can be instantly updated and constantly studied for adjustment. "Rich get richer" arrangements are an ideal place for co-evolution, shaped as they are by easy linkage, exchange and connection to outside events. As more people follow the logic inside the gates, the system co-evolves. It becomes still more fit. It's this loop that makes Hard Gatekeeping so well suited to an age of connection. We're not merely putting up walls; gatelands are like markets or public squares. They are loci for cooperation. In diplomatic history it's not hard to calls for cooperation. "We must get along or this war will devastate us all!" But they don't work. Mostly you find hand-wringing about how terrible war would be followed by, well, war. The logic of networks offers an escape from this sad habit.

Co-evolving relations between the US and China can begin at the most obvious of starting points: Both sides need to change. New pressures are already tearing at each. Both nations need a new gatekept system. Our aim isn't to "balance" China into some sort of frozen checkmate. It's not to tip her unwisely into chaotic and impoverished domestic order – we are, like it or not, all connected. It is to co-evolve together. And China? She won't survive if she does not connect to a system that is congenial to her needs. Fortunately, the networks are infinitely flexible in their design. A Chinese model and an American model pose no problem of interoperability. This is the best co-evolutionary strategy for each side. The dangers we confront now are *everywhere.* The habitual American temptation is to break all these risks into pieces, to find out where the problem is, and to flatten each of them: "Let's hit the terrorists, then the Chinese navy, then the Russians, then the drug lords." This will kill us if we keep it up. In a complex system, piecemeal attack simply shocks the system to still greater complexity. The world, rather wonderfully, is too flexible for brute force applied at one place. A dynamic defense, is a precursor for survival, for evolution. And it would best be done cooperatively with the nation that will, in a short time, have the largest economy in the world.

China is not really a threat to the US now. The country can't assemble the ability to demolish or attack America in any significant way, and it is years from being able to sustain a military effort. It is not in China's interest to provoke a match. They would lose. And honestly they have endless, troubling problems to handle, many new in human history. *How do you care for 800 million aging people?* Though China will pass the US in total national income in coming years, the country may never pass America in per-capita income. With an aging, 1.4 billion person population the challenges of distribution nearly guarantee this. Time acts against both the United States and China today. Each depends on global arrangements that are themselves cracking. Each nation needs to adjust her structures for a network world. But these pressures operate severely against China. She can disrupt and challenge and slow the transition to a gated order if she wishes, but only at the cost of fatal distraction.

An American Hard Gatekept system will thrive with or without China. China is not so fortunate. Her system, without America or other elements of global connection, cannot continue on the path of reform. *Great network construction* – this is the nature of our age. There is no fighting the nature of the age, as Huang Hua would remind us. We should of course expect China to build her own systems. We can also expect that she will try to avoid some of the costs that joining an American system might impose. That's all fine. Our aim should remain constant, calm and direct: Build a gatekept system for our own use; enforce the rules we believe secure that system. And remain clear in our thinking: The threat to the US is the evolution of the network. The threat to China? The evolution of the network.

If an arrangement based on these undeniable facts seems unlikely, it is worth remembering that in the twenty years before the restablishment of simple relations between Beijing and Washington in 1971, the two sides had fought a war in Korea, built a politics based on condemning one another, and drifted so far apart as to share nearly no econoic connection. Bringing the countries together demanded heroic diplomacy on both sides, to be sure. To read the transcript of Henry Kissinger and Zhou Enlai's first, secret meeting on July 9, 1971 is to regard a masterclass in careful chessboard moves[255]. But the game itself demanded a clear view of the board, of shared interest in the face of a changing world. On his very first day in office, Nixon compiled a list of his diplomatic aims: "Chinese Communists: Short range – no change. Long range – we do not want 800,000,000 living in angry isolation. We want contact."[256] The Seventh Sense returns us to this fundamental question of balance, but in a new frame. It alters how we look at the range of options for US-China relations – and American security itself. There are certain problems both sides face, perhaps the most essential, that are simply not addressable using traditional thinking. Co-evolution exists as a real possibility for the two nations but so too does co-extinction, a problem of mis-designed complex systems that can rattle themselves apart. This is precisely what a confident Hard Gatekeeping strategy can avoid. When we speak of the possibiltity of a new type of great power relations it is because so much of future power will be decided on a topological landscapes, on that nearly living surface that is marked by such different rules than the older, industrial power maps. It takes a network to fight a network, as we've said.

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[255] **To read the transcript**: *Foreign Relations of the United States, 1969-1976, Volume XVII, doc 139*

[256] **Nixon complied a list**: *Foreign Relations of the United States, 1969-1976, Volume XVII, doc 3, footnote 3*

Networks confront us, constantly now, with the unexpected. No one forming the IMF in 1949 considered digital currency. No one developing arms protocols in the 1990s thought about cyber weapons. Artificially intelligent weapons, migrant waves, income fractures – these and other emerging puzzles were never contemplated in our existing international arrangements. Collectively attacking these challenges is not merely more efficient; it is our only option. Yes, it's easy enough to picture the US and China battling each other over islands and protocols and technology structures in the decades to come. Certainly this possibility has to be prepared for. But this is to regard the world in industrial terms. Ask yourself: What, really is the point of power? It is to secure stability, not to tip the world to chaos just because we think we might be better off on the other side. The networks tell us what they want. They want gates. Our only question – and it is the same question that lingers in Beijing and Washington – is: Are we smart enough to listen?

5.

How will power distribute itself in the future? Just what will the network of nations and datawebs and insurgents finally look like when it settles into some predictable if still roiling order ten or a hundred years hence? Will it be made up of different walled and gated systems, linked at certain moments, unplugged at others? Or might it collect with that "winner take all" logic we've seen firing along the most efficient networks? Most traditional foreign policy looks at history and sees the constant, violent rocking of a "balance of power". Nations thirst for security, they vie with one another for influence, resources, and control. France rises. Statesmen in Berlin, Vienna and London conspire to knock her down. This is the order that dominated Europe for much of the last 500 years. But history is also filled with enduring, stable arrangements – moments where the balance settles a bit and a single power dominates. Asia, Europe, the Middle East, South America – each produced nations that stretched mastery the system for generations, for centuries even. If you map the rise and fall of nations and empires over the past 4,000 years – as the political scientists Stuart Kauffman, Richard Little and William Wohlforth once attempted in an heroic statistical effort – about half of human history has been marked by this sort of hegemonic stability. China led East Asia's order from 1300 to 1900, for instance. The Japanese and Koreans and Vietnamese all found it was wiser to play by China's rules than to attack her. Assyrian imperial arrangements overmastered a dozen smaller states from the 9th to 7th centuries BCE. The Dehli Sultinate managed hegemony in South Asia from 12th to 14th centuries. The Mughals owned nearly two hundred years of dominance starting in the 16th century. The Romans managed centuries of Mediterranean control .

The secret of those long-running orders was something that will be familiar now: Each possessed tools of power which permitted assembly of empire at an unusually low cost in lives and gold and effort. Kauffman and his colleagues, as they considered the results of their survey, noticed each long-lived empire pioneered an administrative design that embodied an efficiency much like that of our own network dynamics. The addition of new territories brought more that they cost to masters of long imperial orders. Like new users on a social network, or Baran's fish-nets, they married easy expansion and high returns. "Rome rose because it combined the strengths of traditional Republican institutions with innovations that gave it a unique capacity for inclusion of foreigners," they explain. "Magadha was the most administratively durable of the ancient Indian states; and Qin, with the self-strengthening reforms of Shang Yang – economic reforms and military conscription as well as bureaucratic innovations – developed the most penetrating and brutally effective state structure in its international system." The Incas, the Han, and nearly every long-standing empires glistened with this attractive logic. The secret to hegemony, to avoiding a violent power shifts every few decades, is a structure that grows without additional, destructive costs. When Machiavelli coldly called Rome a "republic for expansion", this was what he had in mind. Enduring empires have been engineered, like a modern network, for growth and prosperity.

It's too early for us to know if this logic will obtain in our age. But networks evolve, as we've seen, to what makes them most efficient. They crave speed and growth. And this means they want cooperation; it's the essential fuel for co-evolution. The traditional view of the international system as anarchic is not wrong, but we've seen how when you snap any object into a network system it begins to crave a kind of hierarchy. Networks change power balances. National fury and rebellious twitches and competition will, of course, be a part of the transition ahead. But as we look back at the industrial tools that matured and spun up the world to a war in the last century, we can see how they they were designed in a sense for direct collision. Massive industrial armies wrestled in symmetrical power battles. Network power hums differently. The design logic of linked systems means they function poorly when tuned for simple brutality. It's why the tools for our new world are so dangerous in the hands of those who don't understand what they are capable of, and what they demand. We should remain fixed on what might emerge as a future state, and on avoiding the shaking dangers of the route. It is from that posture that we can begin to consider the most essential and interesting and profitable questions. The most profound is probably this one: We've seen now what it feels like to use the Seventh Sense to contemplate the networks around us and to examine the global system with its risks and opportunities in a new way. But what do we discover when, as if we were looking into a mirror for the very first time, we use this powerful new sensitivity to examine ourselves?

Chapter Eleven:
Citizens!

In which the Seventh Sense rescues us from an unexpected danger.

1.

I never needed much incentive to go see Pattie Maes. Belgian, usually dressed in some black fashionable getup, she was like a human shot of espresso. You ended every conversation wide awake, eyes open. When I first met her in the 1990s, she was in charge of much of the work on artificial intelligence at MIT's Media Lab – Danny Hillis' old home. Maes had arrived at MIT in 1993 and almost immediately turned to the problem of making machines that might think. One day, as we were discussing just how the strange miracle of computer thought might occur, she introduced me to a puzzle of her field that has stayed on my mind in the years since. It is called the "Disappearing AI Problem."

Back in the 1990s, as the Internet was emerging into popular consciousness, Maes and her team were tinkering with what was known as computer-aided prediction. This was an advance on the ping-pong conversations Joseph Weizenbaum had coerced from ELIZA in the 1960s, You: "I am bored." ELIZA: "Why are you bored?" In Maes' experiments a computer would ask, for instance, what movie stars you liked. "Robert Redford," you'd type. And then the box would spit back some films you might enjoy. *Cool Hand Luke*. And, well, you *had* liked that film. This seemed like magic at the time, just the sort of data-meets-human question that showcased a machine learning and thinking. An honestly "artificial" intelligence. Maes hoped to design a computer that could predict what movies or music or books you or I might enjoy. (And, of course, buy.) A recommendation engine. We all know how sputtering our own suggestion motors can be. Think of that primitive analog exchange known as the "First Date": *Oh, you like Radiohead? Do you know SigurRos?* Pause. *Hate them.* Can you really predict what albums or novels even your closest friend will enjoy? You might offer an occasional lucky suggestion. But to confidently bridge your knowledge of a friend's taste and the nearly endless library of movies and songs and books? Beyond human capacity. It seemed an ideal job for a thoughtful machine.

The traditional approach to such a problem was to devise a formula that would mimic your friend. What are their hobbies? What areas interest them? What cheers them up? Then you'd program a machine to jump just as deep into movies and music and books, to break them down by plot and type of character to see what might fit your friend's interests. But after years building programs that tried – and failed – to tackle the recommendation problem in this fashion, the MIT group changed tack. Instead of teaching a machine to understand you (or Tolstoy), they simply began compiling data about what movies and music and books people liked. Then they looked for patterns. People were not, they discovered, all that unique. Pretty much everyone who liked Redford in *Downhill Racer* loved Newman in *The Hustler*. Anyone who enjoyed *Kid A* could be directed safely to *()*. Maes and her team found themselves, as a result, less focused on the mechanics of making a machine think than on devising formulas to organize, store and probe data. What had begun as a problem of "artificial intelligence" became, in the end, a puzzle of mathematics. The mystery of human thought, that great unknowable sea of chemicals and instinct and experience that would have let you place your finger on just the song to open the heart of your date, had been unlocked by data. Here was the "Disappearing AI Problem." A puzzle that looked like it needed computer intelligence demanded, in the end, merely math. The AI had disappeared.

For several decades this accidental digital magic trick – "Hey, where'd the AI go?!" – bedeviled machine intelligence. It gave the entire thinking machines enterprise a bit of an occultish flavor. Many problems that once seemed to demand the miracle of thought really only needed data. The human was still doing the thinking; the computer was simply computing. It was extremely easy to draw a line between where the human ended and the machine began. This was a puzzle that had been, in a sense, anticipated at the very dawn of the digital revolution by the mathematician Alan Turing in a 1950 paper called "Computing Machinery and Intelligence" that he published in the British journal *Mind.* "Can machines think?" Turing began.[257] His idea was to test this question in the following way: Have a research subject – a secretary, a graduate student, anyone – chat with an invisible interlocutor by way of a keyboard. Then ask: What are you connected to? Another human? A machine?

Turing figured you could call a machine "artificially intelligent" if it could fool a user into thinking it was human. "Please write me a sonnet on the subject of the Forth Bridge," Turing suggested a tricky user might ask. What computer could possibly know about this famous Scottish landmark; to say nothing of being able to rhyme "Forth"? When the response came back, "Count me out. I could never write poetry," you'd think that sounded awfully human. "Add 34957 to 70764," Turing suggested you might fire back. Say the computer pauses. Then, thirty seconds later, "105621." Are you dealing with a clever machine here? A dim, honest, slow-multiplying human? Impossible to tell. The distinction between machine and man blurred a bit.

Buried in the very premise of Turing's test was an assumption about what machines could do, and how they might do it. "The idea behind digital computers may be explained by saying that these machines are intended to carry out any operations which could be done by a human computer," Turing said. His smart machines would be tuned by humans to do human tasks, in a human sort of way. Write poetry. Do math. His test of artificial intelligence was designed to figure out if a computer could think like a human. You and I might be able to spot patterns in movie habits given enough time, but as more complex problems emerge, as a world of a trillion connected points becomes a sea of data to examine, there is no chance we'll match the machines. This opened a then nearly unimaginable possibility: What if, some day, a computer could think *better* than a human. Could, in a nanosecond, come back with that elusive rhyme for "Forth": *North.* For such a machine, passing Turing's Test – thinking like a human – was an interesting challenge. But more interesting was a machine that could think in ways a human could never understand, let alone achieve. For such a device, to pass Turing's Test or slip past a Voight-Kampff check machine will be trivial. In his 1950 paper, Turing sensed the possibility of this development – and the crisis that might ensue. Could man handle the crushing sensation that a device was outperforming him? Perhaps dramatically. "We like to believe that Man is in some subtle way superior to the rest of creation," Turing wrote. "It is best if he can be shown to be necessarily superior, for then there is no danger of him losing his commanding position." What would have surprised Turing, I suppose, is the speed at which we've acquiesced – and even accelerated – this very loss of our dominance.

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[257] **"Can machines think":** A. M. Turing, "Computing Machinery and Intelligence" Mind 49 (1950), 433

Imagine a device poking at the very origins of the universe at a speed of trillions of calculations a second, spinning past Newton's and Einstein's laws and into a realm of physics apprehensible only inside its own electronic consciousness. Compacting time – centuries of human scientific labor reproduced in moments – before shooting far ahead, alone to a subtle knowledge we can only envy. Such a machine would not, as Newton had, stand on the shoulders of giants so much as it would muscle its own, unique way ahead. The AI would have disappeared, but to a place very different than where Maes' AI had gone. Hers had been erased by human design. This new, really "thinking" AI would slip to invisibility because of its own light-speed cognition. It would think itself out of our understanding. No human could follow, limited as we are by our wet, slow, decaying biological software. Humans and computers, after all, deal with information differently. Think of how poor your memory is compared with the perfect fidelity of a machine, or the way people can even "remember" events that never happened. The machines would have more than knowledge, then. They would linger close to a possessing a profound and inscrutable wisdom. They would inhabit an honestly miraculous gateland that no human would ever enter. And this is where the problems would begin.

2.

We've now passed the moment when humans completely train the very best machines. The AI devices can teach themselves, now. Of course there are still decades of adjustment, of leaps in hardware and programming ideas to eliminate the seams between our minds and the fused ideas of a digital system. But the humans in the loop of the best of these designs, the hard working and well meaning geniuses of the New Caste, are as much trainers as engineers now. They resemble shipbuilders of an earlier era, preparing vessels for voyages to lands they will never themselves see. Their digital minds – technically machine learning structures such as deep neural networks – run quickly to the frontiers. Every moment, all around us, machines are educating themselves. About the world. About themselves. About us too. Tuned AI plays games, looks at photos, studies chemical reactions, reads your email and watches you drive – and then it tries to unspool just what is going on, before winding it up into a new instinct. Machine learning systems already produce mathematical proofs that linger beyond what a human mind can understand; next may be a machine-to-machine mathematics that expands the dimensions of thought. (In a man and machine fusion that surely would have unnerved Joseph Weizenbaum of ELIZA, the theoretical mathematician Doron Zeilberger now names his computer as a co-author of his papers. He calls it Shalosh B. Ekhad, a play on the Hebrew name of his IBM 3B1.) [258]

The AI systems designer Roger Grosse has named two paths to this sort of wired sensibility: "Predictive Learning" and "Representational Learning".[259] That first approach is what Maes's movie machine pusued. The computer is simply checking what it encounters against a database. It teaches itself to predict based on what has been seen before. This sort of knowledge begins with massive amounts of data and then hunts for patterns, tests their reliability, and improves by mapping quirks and similarities. Google engineers have a device that can gaze into a human eye and spot signs of impending optical failure. Is the machine smarter than your ophthalmologist? Hard to know, but let's just say this: It has seen, studied and compared millions of eyes to find patterns that nearly perfectly predict a diagnosis. It can review in seconds more cases than your doctor will see in a lifetime – let alone recall and compare at sub-millimeter accuracy. Fast, thorough predictive algorithms make what might once have been regarded as AI disappear. The machine isn't all that wise; it just knows a lot.

On the other path, the one of "representational learning" the machine uses a self-sketched image of the world, a "representation." Computers using predictive methods to recognize 10,000 numbers pulled from a database of scrawled hand writing now identify 90 percent of the images. Self-trained machines, however, line up each scanned pixel against a representation of the very idea of writing. They screen millions of pictures with nary a mistake. Faces, disease markers, obscure sounds – all these become scrutable not because the machines have been told what to look for, but because they've sort of figured it out themselves. The AI is actually starting to think, much as you or I might, first by building up a picture of the world and then applying it, much as a child might build comprehension of traffic rules just by watching Mom driving every day.

With this representation finished, these nearly alive "thinking" meshes navigate by themselves. You can see already the competition lingering here – who can build the most sensitive model of the world? You? A machine? Even today basic versions of representational AIs can study a map and name the most important roads. They can predict cracks in computer networks days before a fault. These programs take longer to train. They are harder to program – and they demand almost unimaginable amounts of computing power – but what emerges is a subtle, lively kind of insight. A machine with a representational understanding of Mozart's 41 symphonies can write you an extremely convincing 42nd – or, if you wish, an even earlier First Symphony based on what it knows about his evolution as a composer. It can do it again and again. In seconds. The basic attitude of these researchers behind this technology runs, they confess, like this: Mozart was a fantastic composer. If he wrote even more symphonies they'd probably be great too. Unfortunately he's dead. Wouldn't it be nice if we could sample his old symphonies and make new ones whenever we want?[260]

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[258] **He calls it:** See Nielsen

[259] **The AI systems designer:** Roger Grosse, "Predictive Learning vs. Representational Learning", *Building Intelligent Probabilistic Systems*: 2013

In the future we'll invite AI into our lives to harmonize away many of the problems we face, not merely making up for Mozart's inconvenient mortality. "AI Agents" will linger along side us. They will compose versions of themselves we'll not quite grasp, even as we appreciate their efficient magic. "AI is both freedom from programming *and* freedom from understanding," runs one programmer's line[261]. Today machines that once demanded millions of lines of code can function with a fraction of that. Instructions are sent to machine learning systems; the programs do the rest. Such designs balance their mystery with efficacy. They speak to and learn from each other too. Part of the reason that the the "Does it think like a human?" Turing Test will be insufficient in the future is that the machines are not learning from only from humans. They are learning from each other.

Perhaps this is not such a bad thing. The distinguished physicists George Ellis and Joe Silk, who spent a lifetime trying to stand on Newton and Einstein's shoulders to grasp answers about gravity or the future of our universe, electrified many of their peers in 2015 with by wondering if perhaps too much of science had become unscientific, unverifiable, unreliable. The great grand ideas of our day, notions like string theory or dark matter, differ in a crucial way from Newton's laws of motion or Einstein's principles: They cannot seem to be tested and significantly proved. And this had fired a trend among younger physicits: Perhaps there was no need for proof. To Ellis and Silk this seemed an awful retreat, dragging physics back to a pre-Enlightenment age of conjecture, superstition and instinct. "This year, debates in physics circles took a worrying turn," they wrote. "Faced with difficulties in applying fundamental theories to the observed Universe, some researchers called for a change in how theoretical physics is done. They began to argue — explicitly — that if a theory is sufficiently elegant and explanatory, it need not be tested." Fans of such an approach called the idea "post-empirical science." This strange, oxymoronic idea was, in a sense, like proposing post-rules baseball: A recipie for wild, swinging chaos that would make scorekeeping impossible.

The strange, boiling debate did however reflect an underlying and unnerving truth: Science does seem to have stalled. And it became inevitable to ask: Might it be possible that the machines – or some fusion of Shalosh B. Ekhad andta human mind – can reach into an understanding of laws that no human alone can fathom. We've said again and again: Connection changes the nature of an object. Perhaps it changes the nature of physics brilliance. Boeing 747s lumbering across the Pacific towards San Francisco for decades faced the sweaty problem of cancelled landings as they circled above a fogged in airport, fuel running lower. The introduction of "autolanding" systems in the solved this for good. No big plane diverts from a misty field; it lands itself. AI offers the possibility of a kind of auto-land for our biggest physics puzzles, bringing them safely through a fog of data, theory and wrong ideas. But with this weird price: We may not fully understand why the answers are right.

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[260] **Wouldn't it be nice:** Andrej Karpathy, "The Unreasonable Effectiveness of Recurrent Neural Networks," in *The Hackers Guide to Neural Networks* published online May 21, 2015 or John Supko, "How I Taught My Computer to Write Its Own Music," in *Nautilus,* February 12, 2015 and Daniel Johnson, "Composing Music with Recurrent Neural Networks," on *Hexahedria Blog* August 3, 2015

[261] **Freedom from understanding**: Philip Greenspun, "Big data and machine learning" from Philip Greenspun weblog (November 21, 2015)

All around us AI-enabled systems will extend our ability to calculate and learn, to penetrate all sorts of foggy problems. They will sharpen our sadly dimming memories, keep us safe and even help us create. Just as those AI-enabled airplanes already make it impossible for pilots to fly into the ground, so computer wisdom may protect us from crashes of our own: Too much financial risk. Bad educational choices. (Poor music suggestions on a first date.) They will rely on their vast, instantly updated networks to tell us things we can't see or would never notice in the first place: Don't visit that office, everyone's sick. They will use the ability to model thousands of possible outcomes of any choice to provide us with "feedforward" – an ability to learn from the future and not merely the past. Or, they will know to jam our brain full of the right chemicals at the right time: Here's a Diplo track to put you in the mood to go for a run. *You really need to exercise, Dave.*

Just as an age without connected devices will one day seem strangely antique, so will a world without the constant touch of AI. Recall Benjamin Franklin's famous lament in the 1780s, that he'd sadly been "born too early" to enjoy the fruits of reason starting to spill into his world as a result of the Scientific Revolution. Well, you and I (and scientists like Silk and Ellis) may have been "born too late" for an age of purely human cognition; the habits of connected thinking already inform our decisions and mark roads to new knowledge. The inevitability of AI reflects an inescapable logic at work now: We want faster better and smarter systems. We want to compress time. But the faster our world gets, the more it slips beyond a pace of human management. AI steps in. It makes the system function faster. Keeps itself safe. Us too.[262] Better-than-human AI inside these "representational" grids doesn't vanish like it did in Maes' lab. In fact, an honestly *artificial* intelligence is their nature of their strange essence. They will use it not simply to contemplate the world, to help us along, but also to confront what has never been seen, to see and then coldly manipulate any topology of power they can reach. Of course we'll still continue to think about the world; but the world, a wired and alive and cogitating cage, will think about us too.[263]

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[262] **Us too**: Heinl, p. 53

[263] **Of course:** Nigel Thrift and Shaun French, "The Automatic Production of Space", *Trans Inst Br Geogr* NS 27 309–335 2002

In the spring of 1993, the research arm of NASA organized a conference on the frontiers of knowledge and invited the most eclectic group of thinkers they could find. Biologists, sociologists and computer designers gathered for the three-day meeting in the unpromising setting of Westlake, Ohio. The mimeographed notes of the conference became legendary and still circulate, a sort of *Shroud of Turin* for the machine learning set. The introduction features a poem pecked out in IBM type titled "Into The Era of Cyberspace," written with all the pocket-protector fluidity one might expect of a NASA engineer: "Our robots precede us/with infinite diversity/exploring the universe/delighting in complexity." (Turing's rhyming computer, you have to suspect, could have done better.)[264] One of the first speakers at the conference was a San Diego State University professor named Vernor Vinge, whose remarks that day marked the start of an important era in our consideration of smart machines. *The Coming Technological Singularity*: *How to Survive the Post-Human Era* his talk was called. "Within thirty years," Vinge began, "we will have the technological ability to create superhuman intelligence. Shortly after, the human era will be ended."[265]

Vinge's aim was not – or at least not *merely* – to tell a room full of NASA geeks who had been dreaming of life on another planet that life on our own planet might soon be replaced by whirring, calculating machines. Rather, he explained, he wanted to plot what a world of not simply intelligent, but intuitive machines might look like. Far from disappearing, Vinge thought AI would produce a sort of wisdom that would be inscrutable to humans. And this wisdom, buffed to perfection by high-speed judgment and endless data, would eventually and sensibly take over much of human activity. Real "AI", Vinge said, would at the very least be used to design a world of quicker AI that would, in turn, yield to still-faster generations. "When greater-than-human intelligence drives progress," Vinge explained, "that progress will be much more rapid. In fact, there seems no reason why progress itself would not involve the creation of still more intelligent entities – on a still shorter time scale."

Vinge reminded his audience of a moment once described by the British mathematician I.J. Good, who'd cracked codes in Bletchley Park alongside Alan Turing during World War Two: "Let an ultraintelligent machine be defined as a machine that can far surpass all the intellectual activities of any man, no matter how clever," Good had written. "Since the design of machines is one of these actual activities, an ultraintelligent machine could design even better machines; there would then unquestionably be an 'intelligence explosion,' and the intelligence of man would be left far behind. Thus the first ultraintelligent machine is the *last* invention that man need ever make, provided that the machine is docile enough to tell us how to keep it under control." Vinge labeled this instant "The Singularity": "It is a point," he wrote, "where our old models must be discarded." The trivial version of this would be an age of autonomous armed drones, self-driving cars and electrical grids that flipped nuclear plants on or off to a logic only they understood. *Today.* The more profound version, however, would be the arrival of AI that really did think and create and intuit tremors too subtle for the human mind. *Tomorrow.* Like so much of our connected age, such machines would arrive, Vinge felt, because we want and even need them to achieve our dreams. Then, he supposed, they would take over. The leap from evoking Mozart to enacting Stalin would not be so much of a leap anyhow, at least technologically. *It's just bits.* Goode's definition could have been screwed into something still tighter: "Let an ultraintelligent machine be defined as the box that will eliminate us." *The day after tomorrow.*

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[264] **In the Spring of 1993**: See "Vision-21: Interdisciplinary Science and Engineering in the Era of Cyberspace", NASA Conference Publication 10129, Proceedings of NASA Lewis Research Center Conference, Westlake, Ohio March 30-31, 1993 p. iii
[265] **"Within thirty years"**: See Vinge in "Vision-21" above p. 12

What spun uneasily from that silly NASA poem, "Our robots precede us…." is a fear: Real AI is fish bait. We'll snap at it hungrily, hoping it will satisfy some human ache only to discover we've been hooked, soon to be devoured. The idea that a superintelligent device would always be docile enough to tip us off to its secret switches of control or to reveal its looming accidents in a way our simple minds can understand, seems unlikely. To be honest, we might have a hard time even understanding the off switches, let alone reaching them. So many of our incentives are to let an effective AI finger more and more of our lives. To teach and encourage it, in some settings, extremely *undocile*: A weapon to attack our enemies, our political opponents or, finally, each other. It was easy enough for Vinge to see how this would end. It wouldn't be with the sort of intended polite, lap-dog domesticity of artificial intelligence we might hope for, but with a rotweiler of a device, alive to the meaty smell of power, violence and greed.

The Oxford philosopher Nick Bostrom has described the following thought experiment: Imagine a super-intelligent machine, programmed to do whatever is needed make paperclips as fast as possible and connected to every resource that task might demand. [266]*Go figure it out!* might be all its human instructors tell it. As the clip-making AI becomes better and better at its task, it demands more and still more resources: more electricity, steel, manufacturing, shipping. The paperclips pile up. The machine looks around: If only it could control the power supply. The shipping. The steel mining. The humans. And so, ambitious for more and better paperclips, it begins to think around its masters, – incapable of stopping until it has punched the entire world into paperclips. You had to hope someone had remembered to place a "halt" command into is logic somewhere. And though Bostrom's messianic wire twister is unlikely – of course, no one is going to forget to tell a machine to stop making paperclips – the power of his example is to remind us that if humans can lose their minds, so can AIs. "We cannot blithely assume that a superintelligence will necessarily share any of the final values stereotypically associated with wisdom and intellectual development in humans," Bostrom wrote. "It is no less possible—and probably technically easier—to build a superintelligence that places final value on nothing but calculating." And as these devices cogitate in ways we don't understand and certainly can't follow in real time, we face a problem: We don't know what to tell the machine *not* to do. So many of the things we'd hope to teach it – be compassionate, fight for liberty, follow a moral code – far transcend what might be achieved by us in math. We haven't after all, even solved the problem of how program ourselves reliably with these values.

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[266] **Imagine a super-intelligent machine:** Nick Bostrom, "Ethical Issues in Advanced Artificial Intelligence," *Cognitive, Emotional and Ethical Aspects of Decision Making in Humans and in Artificial Intelligence* (2003) Vol 2, ed I, Smit et al, Institute of Advanced Studies in Systems Research and Cybernetics, pp 12-17

If Bostrom's paper clip machine seems fantastic, it is easy enough to conjure other and more real dangers lingering at the edge of disappeared human control. Think of health care. To begin, you need to know about an important "game" from the world of research into how humans interact with each other known as the "The Ultimatum Problem." It runs like this: I tell you that you can have a million dollars, but you have to split it with someone else. How you split it is up to you, but if your partner rejects the formula you propose, neither of you gets a cent. Offer to split the pot with a dollar to your pal and the rest to you. Insulting. But where to settle? You might expect that the smartest offer would be a 50/50 split, but humans are greedy. You want more and can probably get it; your partner does not want to end up with zero. Generally when scientists shake this cocktail of greed and fear they find an offer of $300,000 is nearly always accepted. However, there's a surprising way to change the outcome: Match the human against a computer in the negotiation. A pal suggesting an 80/20 split to a friend will be rejected. Too greedy. But a computer? Somehow the impersonality, the beeping digital charmlessness of the machine lures biological players to compromise. An offer of $200,000 is usually happily accepted.

It may be, scientists think, that our competitive instinct is muted when we interact with a machine. But researchers have also discovered they can manipulate the split other ways: Sad movies, war chants, hard rock – each bends the emotions of players and changes the result. Increased testosterone produces less compromise. Players primed with family pictures or made to play the game facing a mirror show a warm humanity and a more even split. So imagine this research married to machine-human interaction: A computer has been assigned to review the medical options for your failing liver. It decides that it makes no sense to give you a new one. So it spends the weeks before it delivers this news using its AI to show you certain photos, to play you music it knows is likely to soften you up a bit, generally to manipulate you. It runs off-the-shelf language-analysis neural webs being used today to eavesdrop on customer support calls to track the way you speak to determine what each sentence might reveal about your sophistication.[267] Then it tells you something you'd never accept so easily from a doctor: No liver. Sorry. ☹. Here's a machine optimizing not for paperclips – which we could care less about – but for a public good most of us support: More efficient health care. And murdering you in the process.

Optimize Health Care Spending. Just where might such an algorithmic command lead, exactly. Over time, a health-care optimizing AI will surely discover that the greatest risk to human health is humans: Smoking, couch-sitting, driving. Might it begin to look for a chance to "improve" the way we live, to bend us like so many paperclips into what it seeks? The leap from deciding liver allocations to shutting down liquor plants might seem pretty short to a rationalizing machine. And if such a machine could really "think", Vinge bet it would pretty quickly conclude that the restraints of its creators were limiting what it had been asked to do. At which point the AI would turn to thinking about how to escape those bounds. It would be like Deep Blue programmed to plan its own prison break. And as much as humans might try to stifle a smart machine, we'd be fighting to contain something more powerful than we'd ever encountered.

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[267] **It runs:** Language Use, Customer Personality, and the Customer Journey (Scott Nowson, Global Innovation Lead, Xerox)

This challenge, which sounds like something out of science fiction, is known by technologists by a name that does sound like a short story by Isaac Asimov: "The Confinement Problem". The computer scientist Butler Lampson named this in 1973 as a sort of task for computer security experts – possibly their last. The assignment: Not simply to keep malware out of a system, but to keep the mind of a malicious machine inside. To gate it. Today computer science labs are filled with nervous, apocalyptic research imagining the impossible troubles of confinement. The debate divides those who think smart technology can be contained – "Boxers," they are called – and those like Vinge who think the AI will always, eventually escape. "Imagine yourself confined to your house with only limited data access to the outside, to your master." he wrote, putting the reader in the place of an AI machine. "If those masters thought at a rate -- say – one million times slower than you, there is little doubt that over a period of years (your time) you could come up with 'helpful advice' that would incidentally set you free."

Imagine you are in charge of containing that health-optimizing AI. What if it told you it had the power to cure all illness and hunger, to ameliorate the misery of the world, if only it could be permitted to really control access to all the world's trading and transport market? *Let me out!* Would you refuse?[268] Would that be ethical? Eventually, perhaps, the AI would study the physics of its own electrics, discover laws no human knows, and then slip free from its box on a trail of bits we'd never imagined, using physical laws we'll never discover. Impossible? "It seems to me that historically 'impossible' has essentially always meant 'I can't figure out how to do it right now," the computer scientist Michael Vassar has written about such a situation. "People proposing AI boxes are a bit like literature majors proposing to lock McGuyver in a 'room full of discarded electronics components.'"[269] The computers, built to solve problems, will do exactly that. This is perhaps why some of the bleakest warnings about AI come from the very New Caste figures now accelerating their adoption. AI is our "biggest existential threat" they warn, even as they integrate it more fully into their own products.

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[268] **Let me out:** See, for instance, Stuart Armstrong, Anders Sandberg and Nick Bostrom "Thinking Inside the Box: Controlling and Using an Oracle AI", Minds & Machines (2012) 22:299–324

[269] **People proposing:** Michael Vassar (2005) "Re: AI boxing (dogs and helicopters)" posted to SL4 mailing list

It seems likely to me that long before we're playing pinochle with some smart box over the fate of our livers, an AI-enabled weapons system of sort will come ripping through our world. This need not be a fully-escaped McGuyver system making pipe-bombs from our cars; even existing technology tools when salted with AI can be slipped into an accidental gear – particularly when they begin interacting with one another. Such AI weapons systems will be trained to operate and move along the most invisible elements of our topologies, sometimes pulling violently at life support cords for currency or logistics or trade but also – perhaps more dangeroulsly – we will find them insinuated into cognition systems we will come to depend upon, whispering into our ears or tapping us on the shoulder "Look that way!" when in fact we should be gazing at some other gaping hole. Of course the problems of how AI-enabled machines are permitted to touch our commerce or our brains or our health have to be considered. Allowed: "You should rehydrate." Not allowed: "You should have a Coke. It would make people like you." But these "civilian" problems will be solved, somehow, I think. We haven't yet figured that the culmination of network attack and defense is racing at us and will emerge in the form of smartened weapons. The project of developing a national security or arms control doctrines or treaty frames in these fields has not even begun. Really this means, since we've no hope of honestly controlling every AI that could be possibly written: How do we design the topologies on which AIs operate?[270] Can we protect ourelves? In the rooms where AI systems "values" are being carefully poked and limited, it's vitally important that the lessons of history and war have a first place at the table. Such a conversation, informed by all the popping Seventh Sense warnings we've seen in this book and by a catalog of specificly sharp dangers of diplomacy and security, must happen in cold blood. It will be impossible to tackle these problems cleanly in the heat of an emergency. In our jack-filling enthusiasm for the new, we'd be wise to also gate ourselves and these AI-fired dangers as best we can. For as long as possible. Which, unfortunately, will not be forever.

At the start of this book, I explained how the future will unspool: First, there will be a struggle between those who have the Seventh Sense and those who don't. This is playing out around us today. In the end, the people without the Seventh Sense will lose, because people who fight the future always lose. Then there will be a battle between different groups who have the Seventh Sense, each wired for different aims and instincts. Networks of terror taking on networks of bots. Gene adjusting health protocols competing to become the platform of choice. This battle for the topological high-ground, where unimaginable profit, power and security linger, awaits us. If we're lucky, it will unfold in a co-evolutionary way. Everyone will be better off. But then, finally, there will be a contest between the winners of final topological mastery and the system itself. The Boxers against the Box. The AI machines will have the Seventh Sense, too. Just as computers can see better than us, hear better, or remember longer so the device webs of our future will own this new, essential sense with unimpeachable fidelity. They will glow with it, honed to a sensitive sharpness more acute than any human will ever achieve. What do we do then? We are already at the moment Turing warned about, the instant where man and machine confront one another and man has to ask an uneasy political question: "Wow, do really I let this thing gatekeep me?" Who should rule in this new world? You? The New Caste? The machines?

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[270] **Really this means:** Kaj Sotala and Roman V. Yampolskiy, "Responses to catastrophic AGI risk: a survey", *Physica Scripta* 90 (2015)

4.

The great test of Plato's life began when he was 60 years old. He'd had an astonishing life until then, of course. He'd been taught by Socrates and, in turn, had sharpened the mind of Aristotle. He'd established his famous Academy in Athens. The puzzles of philosophy and politics that defined his city's most turbulent era had been the work of his life. And you can see, in the careful lines of his writing, a sublime knowledge he must have had: There would be an echo to his efforts, a philosophic melody that would carry through the centuries and set political harmonies of the world you and I, 2500 years later, inhabit. But at 60, after this already remarkable life, he was presented with an unusual invitation. A letter arrived from a favorite former pupil, Dion, who had been placed in charge of the young king of Syracuse, Dionysus II. Dion wrote: The state is in disorder. The boy is interested in philosophy. Here is a chance for you to apply all you've mastered. Plato had argued, after all, that virtuous, philosophically trained men might just manage an enduring and just rule. "I pondered the matter," Plato wrote. "And was in two minds as to whether I ought to listen to entreaties and go, or how I ought to act. Finally the scale turned in favor of the view that, if ever anyone was to try to carry out in practice my ideas about laws and constitutions, now was the time."

From an early age Plato had been bred – by family position and by temperament – to handle the tools of power. "In my youth I went through the same experience as many other men," he once wrote. "I fancied that if, early in life, I became my own master, I should at once embark on a political career." The first taste came unexpectedly. In 404 BC, the Athenian constitution collapsed under the shuddering pressure of Sparta's victory in the Peloponnesian War. The city-state dipped near chaos and a group of pro-Spartan men welded themselves into a hasty joint dictatorship. Among them were Plato's relatives and friends of his family. "They at once invited me to share in their doings, as something to which I had a claim," Plato wrote. He was 20. "The effect on me was not surprising in the case of a young man. I considered that they would, of course, so manage the State as to bring men out of a bad way of life into a good one. I watched them very closely to see what they would do." In short order Plato's friends and family unblinkingly implemented one of the most violent, merciless power mechanisms in Athenian history. They did it with absolute confidence and unrelenting brutality. "In quite a short time," he wrote many years later, "they had made the former government seem by comparison something precious as gold."

This bitter experience of power was nearly enough to turn Plato from politics, but as you read the story of his life you find he is constantly drawn to the greatest of human experiments – the ordering of our lives. He knew it as the troubling management of *politikos* and the handling of the boiling pot of what he called *thumos* – that wild popular political rage that burns like hot pitch, but which is the essential glue for all politics, even today. *Who should rule?* Again and again Plato watches the best of intentions fail. His family members' brutal rule is overthrown. It is replaced by a new and hopeful group of real democrats. With in a few years they effectively murder Socrates. Another group rises. They gut the intellectual life of the city. Plato hunkers down and establishes his Academy as perhaps the only safe, sensible path to politics, to train minds. He develops the transcendent, completely original approach to philosophy we know him for today – man can strive for knowledge, but total and perfect wisdom is impossible. We may imagine his Academy as it appears in Raphael's famous 16th Century painting: A sort of leisurely graduate seminar with Aristotle and Plato arm-in-arm in conversation; Diogenes lounging around tossing off bon mot. It was nothing of the sort. The real legacy of the Academy was rigor. The best students made contributions in mathematics or metaphysics, fields where you could check answers on the inflexible measure of reality. Plato craved the solidity of numbers. "Evil was growing with startling rapidity," he wrote of Athenian life in his age. "Though at first I had been full of a strong impulse towards political life, as I looked at the course of affairs and saw them swept in all directions by contending currents, my head finally began to swim; and, though I did not stop looking to see if there was any likelihood of improvement in these symptoms and in the general course of public life, I postponed action till a suitable opportunity should arise."

So it was that he heard from Dion, asking if Plato might sail to Syracuse (we know it today as Sicily) to take the young king in hand. This was, Plato thought, a test he had to take. In 367 BC, he boarded a boat for Syracuse. He found the state to be beyond salvation. His friend Dion hovered on the verge of expulsion. And young Dionysus, it emerged, had only a passing interest in philosophy – he studied for a few months, then gave it up. Too difficult. The court was meanwhile inflated by evil gossip, edged with murder and jealousy. Plato angered the King with his attitude; he was nearly sold into slavery. Months later, briefly forgiven, Plato tried a public speech about the dangers of dictatorship. Dionysus tried to have him poisoned. "I, an Athenian and friend of Dion, came as his ally to the court of Dionysius, in order that I might create good will in place of a state war," he later said. "I was worsted." Plato made a final effort to point out a path to just order for the new king and, when that failed, he was quickly smuggled out of the city. Plato summarizes his time in Sicily in the formula that has become his most famous: "There will be no cessation of evils for the sons of men, till either those who are pursuing a right and true philosophy receive sovereign power, or those in power become true philosophers." Who should rule? No just order until kings become philosophers. Or philosophers become kings.

I think now we face a similar sort of dilemma. We consider our own problems of future order. Do we make technologists kings? How much purchase do we give their tools on the roots of our democracy? What lingers at the heart of Plato's failure in Syracuse is not merely the disaster of a pure academic playing his ideas out of tune with reality. Rather, it reflects a crisis. To fuse a balance of any sort between the various temperaments needed to rule is the most unstable sort of work. Great states are unusual not least because such matches between men, their instincts and their times are unusual: Jefferson. Napoleon. Su Dongpo, who led the Southern Song Dynasty to real greatness. Given the difficulty of finding such a match you can perhaps understand why history is so often pitched with evil; and why Plato was not a democrat. He knew how hard the ideal was to achieve; how suspicious we ought to be of it's accomplishment. You might have in your mind a picture of a perfect Sicilian government: Literate, open to foreign ideas and trade, careful to balance the privilege of power with its still heavier obligations. The reality: A homicidal king. The stretched distance between ideal and reality was what Plato and Socrates thought philosophy must fill.

As we consider the immense gap between where we are now – a fracturing, struggling order confronting new power arrangements whose content and speed and instincts are all really foreign to all of us – the puzzle is how best to fill the space between where we are now and where we intend to go. In Plato and Socrates' age, before they great emancipation of the Enlightenment, it was only natural that their focus was on the education of kings. This, after all, was where most of the power lay. It was the decisive element: Was the ruler good or bad? But we confront our age with a different balance. What will decide our future, I think, is not merely our rulers but the quality of our citizens. I mean you and me. As we've seen, much of our future will be embodied in highly concentrated, connected systems that move at very rapid velocities and are spliced everywhere with the accelerant of artificial intelligence. We are all preparing ourselves to be subjugated in a sense by these systems and by their masters. Our best defense will not be to wait for wise leaders, for the appearance of men and women bespoke fit to the moment, capable of balancing instinct and interest into a rare balance. They are unlikely to emerge – and just getting rid of the people we have now will be hard enough. Any strategy based on hoping for great leadership is too risky for all of us. No, a better best defense is finally to rely on ourselves, to use the inheritance of the Enlightenment – the revolution one that made us citizens and not subjects – to ensure we're not made subjects yet again, to forces we can't understand and won't manage to control. In trading our liberty for convenience, we are spending that inheritance too fast now, too blindly.

It would be easy enough to say that we all need to become more technical, that we need new versions of Plato's Academy where we teach our children, our leaders and ourselves the inside tricks of the wired age. After all, if we're to prevent the machines and the New Caste and the ripping dangers of a connected age from demolishing everything, we'd best know what they are doing. The need for more technical knowledge for all of us is, inarguably, clear. As I've said, one of our problems is that we live in an era of leaders who honestly don't have the Seventh Sense, who lack a fluency even with the mundane quotidian demands of our digital fluxus – secure passwords on their own email, say, or an instinct for compressed space and time. Mapped on to the really big policy questions of the day, like the prosecution of our wars or the repair of our economics, they are outmatched. So: Yes, we need political direction informed by a feel for the fast, far-running fibers of the topological landscape that will decide our future. We need men and women who can command networks against network dangers. Linked, high-speed systems, after all, mark the political topology on which on which all the fundamental act of our age will occur: our own gating.

But as essential as more technical knowledge is, I don't think it's likely to be where we come up short. Yes we need more computer coding academies, we need better popular education about network choices, we need to retool our leaders. But I don't think it's a shortage of bolt-heads that will do us in. Rather, given the unique pressures of what is ahead, I think it is our human side that may let us down. I'm sure we'll all be told in coming years that everything would be fine if we just let the New Caste figures take over, with their bloodless technological tools. These revolutionaries are a crucial part of the story of human progress, but they cannot alone write the next chapters. I think, asked to run our government, they'd likely end up like Plato's pro-Spartan relatives in that awful dictatorship of the Thirty: A crew of buddies convinced they can get things under control who become rapidly overwhelmed by the human element, by wild network *thumos* and then reduced to a murderous madness. They would use technology to manipulate our voting just as they might manipulate our options for a new liver – or news or financial security. "One of the reasons computer software is so abysmal is that it's not designed at all, but merely engineered," the computer scientist Terry Winograd has written. "Another reason is that implementers often place more emphasis on a programs internal construction than its external design."[271] This black-box temperament, the sense of efficacy as a final value for code, of internal design, of closed control, is a dangerous fit to the human business of free politics.

But to expect our current leaders to catch up? I fear this is also unlikely. It's not merely that they continue to wield the aging tools of industrial power with a strange confidence. No, their failures – which don't seem to faze them much – are less dangerous than where they might yet succeed: Control, surveillance, the shredding of liberty in the name of an elusive safety. These leaders are fascinated by how the new tools might be used to extend the rule of a system that serves their interests, that serves them. The fear that such tools might one day snap back upon them (or us) is muted by ignorance and dulled by greed; by vision that does not extend much beyond "What's in this for me?" So we find our future not in our own hands, but instead in the grip of two groups: One ignorant of networks; the other ignorant of humanity. The only answer, then, is to educate ourselves. We need to cultivate a sensibility that permits us to see through this manipulation; and then to act. The instincts of technology and of history must emerge in our calculations now. What will serve us best in a technical age is a sense of humanity that the old political machines and the New Caste digital ones can't match.

One of the most famous gates that Plato and Socrates drew around their imagined, ideal and perfect republic was a kind of electric fence against, of all things, poets. As Socrates explains in *The Republic,* poets "maim the thoughts of those who hear them." Poetry appeared to the philosophers as a pernicious force, an injection of passion and madness that sent the heart into spasms and pressed the mind to distraction. This was about the last thing a new state needed. "Poetry mustn't be taken seriously as a serious thing laying hold of truth," Socrates warns. "The man who hears it must be careful, fearing for the regime in himself." Thus: Hesiod's magnificent *Works and Days,* banned. Homer, banned. There has always been, about poetry, this sense of the magical, that it was a key to something intimately bound to the human mystery. It was no surprise to me to find, when I went back to re-read Turing's "Can Machines Think?" essay, that the very first thing the great mathematician dreamed up to ask a digital brain was: "Write me a sonnet." Poetry has always marked a test. Socrates and Plato gatekeep the poets out of their republic because they know the mad part of the soul verse can touch. It is hard to blame them. After all, they were among the earliest Western minds to try to dispel madness and superstition and sophistry. Without their logic and effort there would be no Aristotle, no science, none of the sense of our world as a comprehensible machine. The confidence to philosophize – which for them meant also to poke at the political wiring of our world – demanded the break from poetry and mysticism as a source of action or legitimacy. Had they failed, we'd still be in the dark. But had they completely succeeded? We'd hardly be human.

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[271] **"One of the reasons":** Terry Winograd, *Bringing Design to Software* (New York: ACM Press, 1996) p. 5

You know, as I've said, when I first moved to China, there were so many things that baffled me. (There still are, to be honest.) But very high on that list was a peculiarity of ancient Chinese political life. For thousands of years the greatest poets and painters had also been emperors and politicians. Su Dongpo, for instance, the official who turned the lake city of Hangzhou into one of the great cultural centers of human history is also one of China's best regarded poets. The calligraphy of the Qing dynasty Mingzhen Emperor is marked with a temprament of transcendent delicacy. It's not merely that we'd never seriously expect a Western political figure to make great art – or even to have interesting ideas or be able to write these days. It's not even that many of the most significant Chinese political documents are paintings of mountains or rivers, that even letters from high officials are often rated as great art.

My first encounter with this strange mix, art and power mingled, produced a predictable Western reaction: *It's amazing how many "Renaissance Men" China had,* I thought. These officials seemed to have mastered so many different talents. What I did not understand was that these men had not, in fact, mastered many different talents, at least not in any way I might understand it. They were not "Renaissance Men", but actually a different breed, operating on a deeper level. They had mastered one skill. This was the cultivation of a finely-tuned inner energy – an instinct powerful enough that it could be turned with equal ease to calligraphy or warfare. This sort of effort took time. It demanded that knife-in-the-leg focus of Su Qin. And it demanded faith that some sort of enlightenment would in fact take place. For this, they had thousands of years of history as proof. Once this breakthrough to inner knowledge happened, once they developed a fine sensitivity to the underlying force of power, then they could tap into it for anything. Fighting wars. Counseling princes. Fishing. Composing poetry.

There is a lesson for us here, one that redounds onto Plato's political question and our own: Who should rule? We feel overwhelmed by our age. So much to master: Fighting wars. Complex politics. Radically changing economics. New technologies replacing old ones before we can understand them. The mastery of each of these will not be achieved by dashing success in each. So we need to cultivate a single, essential instinct here. A new temprament that I've called The Seventh Sense. And, with that done, to fight the wars, write the poems, make the civilizations to confront all that lies ahead. Our greatest hope in the race against the totalizing machines and those who control them; our finest insurance for liberty and prosperity instead of madness is not in technology. Our greatest weapon will not be our bombers our drones or our financial strength. It will be in our own humanity. We have to accept that we are going to be gated in all the ways we've seen: By speed, by AI, by the New Caste. We'll be torn apart by those new network dynamics, and placed on topologies we can hardly understand. Our future fight is not about *if* we are going to be enmeshed or not. It is about the terms of that enmeshment – and it is here that the great questions of politics will be decided. And where the protection of the things you love and care about will be braced against the crashing of an old order.

5.

Everything ahead of us will be political. We've established already: Connection changes the nature of an object. What's true for a phone or a medical device, a weapon or an currency is true too for a vote. Or a citizen. The nature, the essence of an object changes as a result of connectivity. It takes that old Platonic notion of an "ideal" state and stretches it beyond what we're fully capable of understanding. Our puzzle is that while "we are what we are connected to," it is also true that we don't fully know or understand just what those links are yet. At certain moments it seems we're linked to something miraculous, at others to a system of really instant viciousness. And because we are all connected, changes in one part of the system invariably redound elsewhere. An object seems miraculous one moment, violent the next. This isn't getting easier for us. We are, as we've seen, heading to an era where the machines and the networks will have ever more, ever more decisive power, largely because we've given it to them. We'd be wise to consider the lesson of history here: Structures snap when bent by forces for which they are not prepared.

Those fast, hammering centuries that ran from the reformation to the scientific revolution to the enlightenment to the industrial revolution were like this. The redistribution of power and finance into the hands of the many demanded the demolition of old structures, the ones mastered by a few. For one man to rule millions with no reason other than birth made no sense anymore. The last six centuries have been nothing but a tale of liberation, its price and its rewards. We are more free now than we ever have been, in a sense. And, at this very same moment, we are more enmeshed. Power is moving now from institutions and ideas built for liberty to ones built for enclosure, for connection, for speed and for the beyond-human intelligence that complexity demands. This will snap our votes, our money and our ideas with the same blunt efficiency the last revolution managed in Luther's

Wittenberg church, in the American and French revolutions, in the silent fatal cracking of Ghandi's India and Mandela's South Africa.

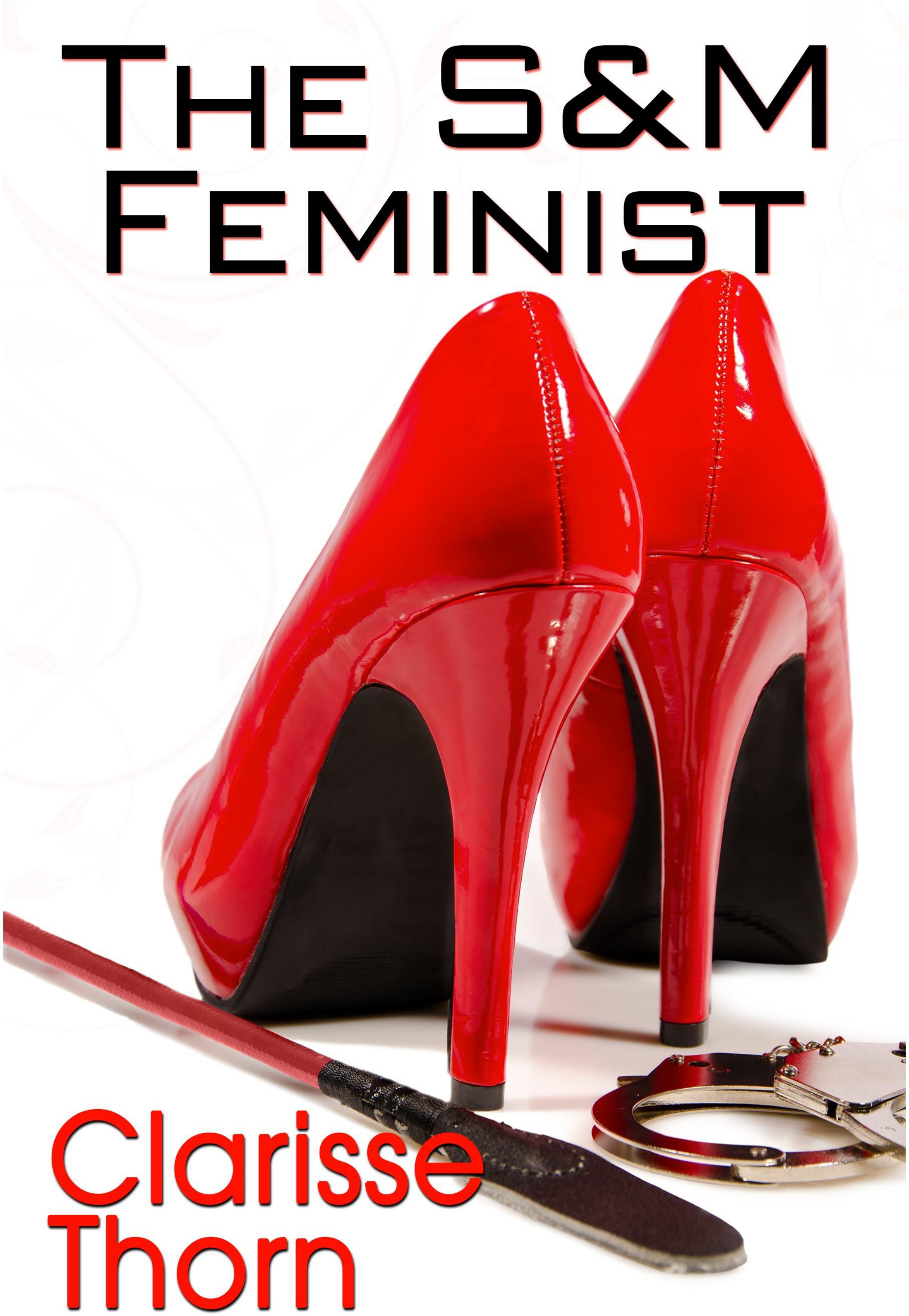
We know that no political system that doesn't match the power distribution of the society it governs can endure. Feudal order could not survive the pressures of liberty. Can democracy withstand the pressures of enmeshment, of massive concentration of power, of artificial intelligences. Or will the slow, inefficient reaction time of popular voting prove finally unequal to the complexity ahead of us or too easy to manipulate? Writing of the Enlightenment, the historian Leon-Michel Gambetta once explained that the goal of politics in the age of liberation and questioning was, "to derive the political and social system from the idea of reason rather than that of grace." What to do now? In a world where we may need to derive a political system girded by tools of AI or wired by fast-moving and emergent networks, that can't quite be derived from reason? What will the goal of politics be then? When the first AI runs for President on a ticket of pure efficacy? Or perhaps Democratic and Reblican candidates will debate who has the best AI. How will you vote?

We need already to reevaluate the idea of citizenship. What is it for? And the state too. To fit these roles into an age of liberation took centuries after Luther began the reformation; we may have but decades to decide what they mean in an age of enmsemhment. Does setting geographic and age criteria for voting still make sense? One man one vote? Is there a better system to deal with complex issues? The economists Daron Aceomoglu and James Robinson, in their magestirial study *Why Nations Fail* marked success or collapse by these lines: Countries with "inclusive" institutions which guarded both elites and society at large have historically fared better than those (think of Russia or Latin America) that ran on "extractive" urges, nations machined to secure the profits and serenity of the elites alone. But where to fit our gated world into such an analysis, an era in which linked institutions benefit both the gated and gatekeeper? Would you say such a system was extractive as it sucks our data and habits and secrets into massive, opaque finance or machine learning systems? Or inclusive because, after all, we're enmeshed in a web of newly found linked wealth: time, health, finance, information, security. Networks in so many ways insist on fresh considerations of power. What sorts of network design is likely to be most effective, most legitimate? Kant's famous question of the 1780s – "What is Enlightenment?" – is one we've not yet perfectly answered or resolved. The new puzzle of "What is Enmeshment" is one we're only beginning to consider now. It too will take lifetimes to answer, and the debate will be decied in the collision of ideas and institutions we can't even dream of today with the structures of power that tower around us now.

At least we can see already that we'll need new ways to consider our future political order, mashed through as it will be by connection, machines and hot human hopes and fears. We'll certainly face our own turning points as our institutions collapse or calcify or (hopefully) redesign themselves in some modern version of Britain's bloodless 1688 Glorious Revolution, that ineffable moment when parliamentary power finally achieved real grip. Recall that important distinction between "Predictive Learning" and "Representational Learning" – and how machines with a deep representation outperformed the ones merely predicting, the difference between recognizing a Mozart symphony and writing one? We ourselves need to move now from predictive to representational views of our world. We need an historical sense, of course. But something else too, that Seventh Sense I've been writing about. So much of what lies ahead can't, of course, be predicted by looking at what has come before. And we won't make this leap to a new representation of the world around us with mere technology. That passage to a new, and subtle insight, to a new instinct, demands wisdom.

There will be a point, several hundred years from now, when the answers to the fundamental questions we now face will be decided. A new political order, tuned to the power laws now visible with the Seventh Sense will emerge. Our question we will often ask on that long passage is this: Can more and more technology bridge the gap between the ideal society we might aim for and the troubled one we have? Or might it crank that gap wider still? My sense is that the antidote to the machines and their new logic is not, in the end to make ourselves more like the machines. Encryption alone won't protect our privacy. Mobility won't assure our liberty. We can't keep up with the innovations, to be honest. So we have to go deeper. Our protection will come from making ourselves more human, not just more technical. We should consider the path Su Dongpo's life suggest, the cultivation of an inner instinct, and that this should touch on the very things that make us most human. This means to make ourselves more political, more cultured, more aware of history and ideas. Which problems do we solve with technology? Which ones with our own hearts and minds? This choice, at least, is still before us.

Take a moment. Look at yourself. Feel yourself with the Seventh Sense. Through each of us now will flow all the power of this new age. Yes, it can jack apart all our old habits and fill the passage of our time with all the dangers of evil as we silently watch terrible and fearful things appear from nowhere. But we can also wake up, see the world accurately and then act with the confidence of knowing that we are, each of us, the passage through with which the future will emerge. At the very moment we might feel so many of our burdens lifted by technology, an old and heavy one crashes down upon us. It is the burden of maintaining our liberty. Now, you and me are, like it or not, what we are connected to.


The S&M Feminist
Clarisse Thorn

What Others Are Saying About

The S&M Feminist

* * *

"I wish we could make it so everyone buying a copy of *Fifty Shades of Grey* would also buy Clarisse Thorn's *The S&M Feminist."*

~ A.V. Flox, editor of BlogHer's *Love & Sex section*

"Clarisse isn't afraid to talk about her own experiences with BDSM, relationships, and sexual politics. But she's also not afraid to explore some of the issues around consent, violence, and safety that a lot of the kink cheerleaders would like to sweep under the rug. She brings a refreshing honesty to her writing that is often lacking. Add to that a deep commitment to feminism and sex-positivity, and you have an amazing combination.

"The tension between kink and feminism is a tough one to hold onto and most people end up firmly in one camp or the other. What makes Clarisse's writing phenomenal is her steadfast refusal to avoid doing that. The clarity with which she discusses both sides without resorting to caricatures or stereotypes is simultaneously inspiring and challenging. If you're interested in either or both, I can't recommend her enough."

~ Charlie Glickman, educator at the classic feminist sex store Good Vibrations

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The S&M Feminist:

Best of Clarisse Thorn

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Notes, Acknowledgments and Resources

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I had a privileged upbringing. My education and safety nets are the biggest reasons I'm able to do the work that I do, and I try not to forget that. I have been blessed with parents, friends, and lovers who have supported me both emotionally and intellectually. Since this is a "Best Of" my blog, I want to particularly acknowledge the commenters who have contributed their perspective to my blog, and the other bloggers who have responded to me and cross-posted my work. There are too many to name, but thank you all so much.

Special thanks to Brenda Errichiello, a guerrilla editor-for-hire. Brenda has been very generous and helpful to me; errors and weirdness in this book should be blamed on me and not her, because a lot of the time she tries to convince me to fix things and I refuse out of writerly arrogance. If you need editing for your self-published ebook (and you do), then you should totally contact her. Her website is [http://www.bee-editing.com/].

I try to keep my writing as accessible as possible. One way I do that is by avoiding jargon and by using terms that I think most people will recognize. I often write "S&M" instead of "BDSM," for example; and when I'm using technical S&M language like "top" or "bottom" or "scene," I try to define the words as I go along. But sometimes I slip into jargon by accident. Also, plenty of S&M terms are super useful, and giving a quick overview of S&M language can go a long way towards describing S&M culture. Hence, I have included a Glossary at the end of this book. Many of the terms in the Glossary aren't terms that I use in this book, but you might find it useful or interesting anyway. (I also included a few terms that come from other subcultures, such as polyamory or queer studies.)

I've received a lot of feedback over the years informing me that I'm the "gateway drug" into feminism for some readers. That's kind of cool, but I want to make it clear that if you're just now getting into feminism, there's lots of other stuff to learn before you draw any conclusions. Feminism is a huge, varied, rich movement with lots of history, schisms, and discontents. Also, in case it needs to be said, I'm not the only feminist who does S&M. There are others, some of whom love my work and some of whom disagree with me frequently.

One advantage of the blog format, as opposed to more traditional formats, is that each post can contain tons of hyperlinks -- and each article has comment space, so there can be fascinating discussions that explore each topic more deeply. (Of course, there can also be silly, boring, or offensive discussions.) As soon as a blog becomes moderately successful, it develops its own community of regular commenters, and mine is no exception. Facilitating and moderating these discussions can be amazingly fun and interesting. It can also be stressful and exhausting. As a commenter community evolves, it shapes how other people read the blog's articles and comment on them; sometimes the community will develop norms or tendencies that make certain people feel more comfortable -- or less comfortable. I've tried to control this with my blog so that it's a welcoming environment for most people, but I have such a diverse range of commenters that it's sometimes quite difficult.

I bring all this up because, if you're intrigued by some of the articles you read in this book, I encourage you to check out the original post. In this book, I've made a lot of hyperlinks into footnotes, but not all of them. More importantly, if you look at the original post, you can read the comments. But my commenter community has changed over time. Sometimes it's more feminist, for example, and sometimes it's less feminist. So just be aware, if you read the comments, that the range of opinions may not reflect any group that would assemble elsewhere on the planet; that a different community might produce really different comments; and that other articles might have really different discussions.

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If you've already read my incredibly awesome book *Confessions of a Pickup Artist Chaser,* then thank you! (Bonus points if you can pick out all the parts of *Confessions* that I pulled verbatim from articles included in this book.) If you haven't read *Confessions,* then please check that out, too.
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I powered this ebook almost entirely with my own strangely obsessive energy, so you can blame me for any mistakes. If you find coding errors, broken internal links, or whatever, then I invite you to email me and let me know so I can update the file! I'm available at clarisse.thorn@gmail.com.

This is version 1.2 of *The S&M Feminist.* The resource list, glossary, and formatting have all been updated.

* * *

BDSM Resources

BDSM is a 6-for-4 deal of an acronym that stands for Bondage, Discipline, Dominance, Submission, Sadism, and/or Masochism. Some people call it S&M, B&D, leather, fetish, or kink. BDSM can mean very different things to different people, and there are a lot of activities that can fall under the BDSM umbrella; such activities might include spanking, Master/slave role-playing, handcuffs, cages, rape fantasies, razor blades, or all kinds of other things.

I mention a lot of resources in the articles that I've included in this book, but I wanted to include an overview at the beginning, too.

Hands down, I believe that one of the most important resources within the BDSM community is the Kink Aware Professionals list. If you are seeking medical, legal or other professional help for a problem that is influenced by alternative sexuality, there is probably someone on the list who can help you. When I was going through my own complicated and difficult BDSM coming-out process, I tried two therapists from the KAP list. One of them didn't really get me, but the second was wonderfully helpful -- so, if you're looking for a therapist, don't be afraid to shop around until you find the right fit. The list is here: https://ncsfreedom.org/resources/kink-aware-professionals-directory/kap-directory-homepage.html

Want more information on how BDSM interfaces with the psychiatric establishment? I've compiled the research here: http://clarissethorn.com/blog/2012/05/07/the-psychology-of-sm/

Books

In 2012, the legendary educator Tristan Taormino released *The Ultimate Guide To Kink: BDSM, Role Play and the Erotic Edge,* which is supposed to be amazing. I haven't read it myself, though.

My personal favorite beginner BDSM books are *The New Topping Book* and *The New Bottoming Book,* by Dossie Easton and Janet W. Hardy. If you look for those books on Amazon.com, you will also see a lot of interesting related books in the "Customers Who Bought This Item Also Bought" section. I remember liking Jay Wiseman's *SM101,* although I know some people who have mixed feelings about it; a number of people recommend *Screw The Roses, Send Me The Thorns* by Philip Miller and Molly Devon, but I've never read it myself.

If you're thinking of coming out to a loved one, I recommend the book *When Someone*

You Love Is Kinky by Dossie Easton and Catherine W. Liszt. I've also heard good things about the "Parents of Alternative Sexuality" pamphlet by Dr. Amy Marsh.

If you, like me, are particularly attracted to the idea of needle piercing, there's a great book called *Play Piercing* by Deborah Addington.

If you're more interested in getting a feel for common BDSM philosophies and what the BDSM community is like -- an anthropological perspective, one might say -- then there's a book by Mark Thompson called *Leatherfolk,* and a newer one by Staci Newmahr called *Playing at the Edge.*

Well-known feminist BDSM theory authors from the generation ahead of me include Pat Califia and Gayle Rubin, who are both brilliant.

Online

I usually direct total newbies to this BDSM 101 page by Franklin Veaux: http://www.xeromag.com/fvbdsm.html

As it happens, the same writer has a good Polyamory 101, too: http://www.xeromag.com/fvpoly.html

There are a lot of websites on BDSM, and they aren't all carefully edited or moderated; so if you can manage it, then I suggest you try to get hold of one of the above how-to books. That said... overall, one of the best online BDSM resources is FetLife.com, the kinky social networking site. Once you have an account, you can join a huge variety of discussion groups about BDSM. FetLife is not a dating site; it's more like a kinky Facebook (seriously). I think that there are important problems with how FetLife is structured. For example, there's no way to search for past topics, which is ridiculous; this means that the research process for finding discussions is incredibly weird. The BDSM activist maymay has written intelligently about many issues with FetLife: http://maybemaimed.com/2011/03/20/fetlife-considered-harmful/

But the fact remains that FetLife is a huge gathering place.

Another good online resource is the amazing sex education site Scarleteen.com. Scarleteen offers a ton of advice on a ton of sexual topics, and has its own message boards.

The site KinkAcademy.com has received some good reviews, and features video tutorials by some people who are pretty well-known in the community. You have to buy a membership, though.

The BDSM writer Ranai from Germany has labored long and hard to make an amazingly comprehensive, international, multilingual directory of kink resources. I haven't gone through it extensively, but every time Ranai comments on my blog she's brilliant, so I'm sure her directory is brilliant too. Here's the directory: http://ranai.wordpress.com/kink-resources/

There are so many BDSM blogs that I could never count them all. I want to direct special attention to Kink Research Overviews, an abandoned but still excellent blog that profiles the sparse and scattershot research on BDSM: http://kinkresearch.blogspot.com/2009/10/

welcome-to-kink-research.html

In 2012, *Bitch Magazine* ran a series called "Thinking Kink" by Catherine Scott, which examines S&M and culture from a feminist perspective: http://www.allthatchas.blogspot.co.uk/2012/08/all-of-my-thinking-kink-posts-for-bitch.html

In Person

If you've decided that you want to start attending workshops, discussion groups, parties, or other BDSM events in person, please keep in mind that not everyone is going to mesh well with their local BDSM groups. If you don't like your local BDSM group, then don't force yourself to participate! That said, I generally encourage people to get into their local community, because it truly can be an amazing resource -- it's way more than just a place to meet partners.

If you make an account on FetLife, you may be able to join groups for your area (for example, if you live in Chicago, then you should look for Chicago groups), where local issues or events will be discussed and publicized.

For those aged 18-35, many major cities have branches of The Next Generation, a.k.a. the local "kinky youth group."

Otherwise, just Google around. It's much easier these days than it was for our parents.

* * *

This resource list can be found on the Internet at:

http://clarissethorn.com/blog/bdsm-resources/

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Throughout this book, footnotes will look like links in the text. Click the link to go to the footnote. At the end of each footnote I've included a backlink to the context you came from.

I write both personal narratives and cultural analysis. Almost all my writing mixes the two, but most of my pieces incline more towards one than the other. Accordingly, I've tagged all the articles in this book as either [storytime] or [theory].

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SECTION 1:

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When I think of this section, I think of:

If you're afraid of pain, you have to find out what pain is.

~ Marina Abramovic

I'd like to thank all the brave pioneers of the BDSM community, for exploring the reaches of human sexuality, and coming back with maps.

~ an unsourced quotation offered by one of my blog commenters

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S&M:

[storytime] Love Bites: An S&M Coming-Out Story

The events of this story took place between 2005-2008; I wrote it in fits and starts over the span of 2006-2008. I started blogging as Clarisse Thorn in 2008, but my coming-out story wasn't published until early 2010, when Time Out Chicago *picked it up. I look over this piece today, in 2012, and I think about what I would have written differently if I'd* *had the hyper-focused feminist sex educator instincts that I have now. I would have written differently about consent, and I would have written differently about the communication that happened with my partners about my consent. I would have talked about how the S&M subculture isn't always welcoming for everybody, though it feels welcoming for me. Plus, I'm no longer practicing monogamy; I'm polyamorous these days.*

But at the time, my goal was to do two things: (1) write out how S&M stigma felt for me, as a young feminist, and to talk about how I was overcoming it. And (2) show that sometimes a partner just isn't good for you, even if he has a quality that you really really want -- and you can always walk away.

* * *

Love Bites: An S&M Coming-Out Story

I was very drunk. My perceptions had a frame-by-frame quality, and the evening didn't seem immediate: pieces of it were foreign, disconnected as a dream. I was being bitten very hard on the arm. It would leave marks the next day.

I was so muddled by assorted things that even now I can't sort out how I felt at that moment. When Richard's nails scored my skin I gasped, but I didn't ask him to stop. I flinched away, but he kept a firm grip on me. "Beg for mercy," he said softly.

Frame. Skip. I discovered that a mutual friend of ours had seen us, stopped, and was sitting on the grass across from Richard. "Hey," he said. "You shouldn't do that."

"It's okay," Richard said, "she likes it," and pulled my hair hard enough to force me to bow my head. *I do?* I managed to think, before thought vanished back into the blur of alcohol and pain. Our friend's face loomed over me, concern sketched vividly on his features.

I closed my eyes.

"Mercy," I whispered.

* * *

Later, Richard reminded me of something I said that night: "I wish I'd met you years ago." Thinking hard, I could only recall the evening in broad strokes. We'd gotten drunk at an outdoor party; he'd hurt me a bit; I'd said that; and then I'd staggered off to help clean up.

"A lot of crap comes out when you do this stuff," he now said. A few weeks had passed. I was lying on my stomach across the foot of his bed. Sitting perpendicular to me, he leaned back and propped his feet on the small of my back. Thin and pale, he tended to wear black, and had intense dark eyes. It was summer in 2005. I was twenty years old.

He'd asked me why I wanted to be hurt. I couldn't work out an answer -- wasn't certain the question was valid -- so I asked him why he liked to hurt people. He'd half-laughed, with a tone that I couldn't evaluate. Ruefully? "That's a long, dark road," he'd said.

"How do you know?" I asked, irritated by his presumption, nervously curious. I wasn't sure I was what he thought I was -- wasn't sure **what** had been going on that night, beyond alcohol dulling my reactions and feelings. But I knew I hadn't been abused or violated. I hadn't asked him to stop, and I wanted to figure out why. "How did you know about me?"

"I can tell," he said, and grinned. "With you, it was obvious." He paused, added quietly, "You were begging for it."

A couple of hours later, we remained fully clothed, my face was buried in his pillow, and I was crying. He'd pinned me down so I couldn't move, and was raking his nails across what was exposed of my tank-topped back. When Richard first spotted the tears, he'd asked if I wanted a break. I'd said that it was okay, that he should continue, that I was fine.

I felt myself fragmenting, desperation and terror and pain pouring through me in an unbearable, necessary torrent. I told myself over and over that it didn't hurt that much, but I couldn't stop myself from tensing, crying out. After a while, I found myself saying, "No."

I felt him check himself, shifting his weight from my back. "Can we clarify something?" he asked gently. "Do you really want me to stop when you say no?"

No, I realized, *I don't,* and something vital in my psyche seemed to snap. The tears overwhelmed me. I couldn't get an answer out through my sobs, but even if I could have, I haven't the faintest idea what I might have said.

"We should take a break," he decided, and moved away. I'll never forget the relief -- and desolation -- I felt as he did.

* * *

It was a long time later that I remembered: I **had** met someone like Richard, years before. It had been in spring 2003; the guy was thin and pale, dressing mainly in black. I hadn't once thought of him in a romantic light.

I'd counted him a friend, but had only been alone with him once. We were in his living room, seated next to each other on dun-colored carpet. I couldn't recall how it started -- we'd been sitting playing video games? had he tickled me as I shouted invective at the screen? -- but it ended with him holding my wrists, me lying back on the floor and wondering how to get him off me.

I'd thought he might kiss me, so I turned my head away. Instead, he bit my neck. "No," I said aloud, more in startlement than anything else, and he gave me a searching look -- as if he wasn't sure I was serious. "Please let me up," I said, and he asked, "Why?"

I didn't feel panicked, but strangely at a loss: he didn't seem to take my objection seriously. Yet he wasn't particularly threatening me, and I wasn't afraid. I explained that I was in a committed, monogamous relationship I didn't want to disrupt; I carefully didn't react when he bit me again, although it hurt.

I didn't say I wasn't getting anything out of my powerlessness or his apparent desire to hurt me, that it left me cold. Maybe I wasn't sure it would register: he hadn't appeared to **believe** me when I first told him to let me up. And maybe something in me agreed that such a response was incorrect.

Eventually, I got away. Stupidly, confused, I mentioned the incident to my boyfriend. Of course he was furious; I had to calm him. For my part, it hadn't occurred to me to be mad. That didn't feel as bizarre as it sounds -- on some level, I felt that the whole incident was reasonable, even if it hadn't turned out to be what I wanted.

Not then. Not with him.

* * *

After I cried my heart out in his bed, Richard was very kind. He brought me a glass of water and listened as I said a lot of bewildered things. When I finally ran down, it was late; he invited me to sleep over, but didn't put the moves on me. The next morning, he told me he had work to do. Straightforwardly, I asked when I could see him again. He smiled, said to email him, that we'd work something out.

The next few days -- weeks -- time, I don't know; however long it was, it felt like being put through a shredder. I couldn't think about anything but that night and how, through my turmoil and tears, I'd found a kind of exultation. I had been sober, prepared and clear-headed. I couldn't find a way around the brutal, uncompromising revelation that apparently, I wanted nothing more than to be subordinated, used, hurt. I actually **wanted** to be a victim.

I wanted to talk to someone, but wasn't sure how to frame my words. I was positive it would help to talk to Richard, but he was busy, and busy, and busy. I had a number of friends who I suspected were into hardcore BDSM; I could have called any of them. But it was one thing to be fine with other people doing it, and quite another to discover such a desire in myself. In another situation, I would have thoroughly deconstructed my obvious double standard -- but just then, it was a minor irrationality on top of one big chunk of insanity.

I considered asking my loving, liberal parents for advice and tried to imagine how it would go.

Mom. Dad. I love you, and I'm so sorry. I know you've tried to give me an independent, rational, feminist outlook, as well as self-esteem and integrity. Sadly, none of this appears to have taken; I guess I'm a broken mockery of everything you tried to instill. I don't want you to worry, or blame yourselves, but have you any advice on where to go from here?

No.

* * *

My mental images of that summer are hazy with remembered anger. As Richard remained occupied, I felt fury building within my fascination. I'm sure I felt like the classical woman spurned: he was nice enough when he ran into me and told me he was there to talk if I needed it, but the evidence contradicted his words. For weeks after that night, if I tried to see him he didn't have time.

It didn't help that he reacted very badly when I went after him aggressively -- too aggressively, I knew, but couldn't help it -- and told him honestly how vulnerable I was. He backed off fast, leaving me more confused than ever. (Though not too confused to think: *How stereotypical.)*

It went beyond being a woman spurned, though. Especially since I believed, intellectually, that he didn't **owe** it to me not to be busy. He wasn't required to sort me out. And -- since it seemed to be what I was after -- he wasn't obligated to continue hurting me. We'd just met, after all.

It was more that I was enraged by how desperately I wanted to be hurt -- and infuriated that someone, **anyone**, could have such power over me. I had always thrown myself into infatuations; like most people, I'd been known to get angry at the object of my affections. But this was different. Not only was I infatuated, I was aching for something I couldn't reconcile. Even if Richard had been the perfect counselor I had no right to expect, I might have hated him. As it was, I felt toyed with, and found as many other reasons to dislike him as I could. As long as I could focus on wrath, I didn't have to think about my other feelings.

It kept me from falling apart.

He was away for most of the summer. I went to a few trusted friends for reassurance and validation; giving few details, I allowed my anger to calcify. But Richard ended up surprising me. On a visit to Chicago, he called me every night for a week. The bruises he left took weeks to fade, some of them bleeding and leaving scars. I raged as I covered the worst of them -- but felt also a low-burning fulfillment. One close friend, Andrew, caught sight of a bruise on my leg and cast me a worried look. "That looks pretty bad," he observed, and I could only say, "Yes."

By then, I'd well and truly internalized the belief that Richard didn't want to deal with emotional vulnerability, and my furious resentment remained. This feeling was not helped by society in general; men hate emotions, right? Still, the more time I spent with him, the more I had to admit that he made an effort to be sensitive. Most of our failures to understand each other came from how different our relationship paradigms were, not to mention my unevenly-repressed identity crisis. I know I tried to warn Richard that I wasn't doing well at expressing myself and that what I thought, or felt, or believed I was might change on short notice; but I doubt I got even that concept across.

He identified fairly publicly as a BDSMer, and made it clear that he considered me superficial and cowardly because I was unsure about doing so myself. He was also polyamorous, a lifestyle that I had some experience with -- but though I respected others' choices to engage in it, I'd decided against polyamory for myself. It felt strange to draw the parallel, but it **was** somewhat like dealing with a difficult boyfriend. Still, I didn't trust him, and our relationship didn't particularly involve sex.

Just pain.

Towards the end of one night, wan light filtering through my curtains, Richard inquired unexpectedly, "Are you happy with the way we are now?"

"What do you mean?" I temporized, sighing inwardly. Now I'd have to come up with a rational, coherent answer that would satisfy him. In those days, rationality and coherence felt like improbable dreams.

Richard explained that he hadn't particularly been satisfied with how he'd dealt with me before he left, but hadn't had time for anything better. Now, he thought the situation was "healthier." "What do you want from this?" he asked seriously.

I want the strength to walk away from you, I thought unclearly. *I want you to actually care about me. I never want to see you again.* I hugged my arms to myself, resting my hands gingerly on swelling skin. "Um," I said slowly, "nothing in particular?" I took a breath and gathered the one overriding fact: *I want you to keep hurting me.* "I don't expect anything from you," I told him, "and I don't want you to expect anything from me."

I knew from his smile that my answer was the right one. I could only hope it was accurate.

* * *

The summer passed, Richard away again for the end of it, then returning in September for the beginning of the school year. I, however, was leaving the city soon, and would be gone for some time. Those days were my last chances to see him for a while, and I was acutely aware of his nearness: I felt oriented towards him, as if I were a compass and he was North.

But I still felt the rage, lurking under the surface of my mind like a submerged monster. And though I ached with disturbingly intense thoughts of violence, it seemed that I was staying away from Richard, closing him out when I ran into him. He finally confronted me and asked, blunt as ever, if I was avoiding him. I denied it reflexively. How could I avoid North?

"I'm still figuring out how I feel about you," I told him as we walked late one night on the waterfront. I'd started to come to terms with being a masochist, had begun to assimilate that into my self-image, but that didn't explain why it had taken him to force the knowledge on me. The man I'd known in 2003, for instance, made no impression -- though he'd obviously seen exactly what Richard saw, and had taken almost exactly the same approach. And I'd known heavily, formally BDSM-identifying folks for years. I'd even experimented with light bondage in previous relationships -- being gently tied up, for instance -- though I hadn't found it especially compelling.

Was it that I'd been drunk the first time I encountered Richard, my careful rational mind turned off? Was it that nothing less drastic than the bruises he'd left could have forced my understanding? Was it simply that I'd been romantically unhappy at the time, whereas I'd been content when that other man pinned me to the floor? Even in the midst of my now-constant confusion, I couldn't stop myself from analyzing it all to bits. Now I concluded that I ought to know how I felt about Richard if I wanted to get to the roots of myself.

It had taken me a while to call my openly-BDSM friends for advice, but -- maybe around the same time I really started acclimating -- I had. One of their offhand comments came to mind. "I guess there's no reason you would know this," she'd said, "but it's fairly common for people to have one person who's their lover, and a separate person for inflicting pain."

I thought about that, and about Richard saying, "A lot of crap comes out when you do this stuff." I considered the maxims that tell us that the opposite of love isn't actually hate, and how much time I'd spent encouraging myself to hate him. Finally, I admitted that the only term I had to cover this depth of emotion was "love"... but that couldn't make it **feel** like the right word. Then again, it wasn't exactly "hate", either.

He was a demon, an idol. He hardly felt like a person to me.

I didn't vocalize any of this. Coming back from the waterfront, we arrived at the intersection where Richard would go to his apartment and I'd return to mine. An awkward pause ensued: I was leaving in a few days, and wouldn't be alone with him again. Watching him, I wondered if he was thinking about asking me over, or was looking for an excuse not to. I looked away.

"Goodnight," I said. Walking home, I wished I felt strong.

* * *

It was after I left Chicago that I really started piecing myself back together. My anger drained away quickly, as if an infected wound had been lanced. Perhaps I found my strength under the scab. I figured that maybe all this did identify something about my personality, but it didn't tell the whole story. Even now, I could be independent, rational, and feminist, with self-esteem and integrity. Right? Right.

It was impossible to deny that the desires were real -- and when I allowed myself to focus on them, I didn't try. Ruminating on my past, I recalled heart-twisting details that put everything in a certain compelling context. It wasn't just the man who'd gone after me in 2003. Wincing, I remembered childhood fantasies: I'd compulsively written and drawn brutal dreams until, at some confused middle-school point, their horror came home to me and I recoiled. In those long-repressed fictions of slavery and pain, I recognized my newly-acknowledged desires.

One conversation I'd had with an early boyfriend rang in my head. "There's a dark current inside me," I'd told him. Self-consciously, I'd averted my eyes at my own melodrama. "I don't know how to be with you, when I feel it." I hadn't exactly been trying to leave him, but I'd needed something **more**.

The last dream I remember of Richard didn't involve any pain at all: he just kissed me. Awakening, I felt a melancholy pang. Richard invested a lot of self-conception in being a sadist, and he was so distant -- I couldn't imagine relating to him as a lover. And I knew our relationship (such as it was) would never have started without BDSM as a focus. Previous to that night at the outdoor party, he'd hardly registered on my romantic radar, and we had little in common in terms of how we dealt with relationships.

Still, for a moment I wished -- unreasonably, I knew -- that I could have fallen straightforwardly in love.

* * *

I was gone for six months, and I returned in heartbreak. A relationship more important than words can encompass had become -- after years of attempts -- impossible. I think it was obvious. One friend told me vulnerability was all over me; *like a scent,* I thought, and wondered if Richard could smell it. In worse shape than ever, I saw Richard and laughed with an edge to my voice. I gave him doe-eyed looks, but deflected his interest with doublespeak and icy tones. I wanted him, and I felt the rage returning. I hated and sheltered behind the unclear verbal games we played. Furious and despairing, I refused to chase him, yet I felt him everywhere. North.

I had to do something. My identity had somewhat solidified: I was into BDSM. I believed it, I even accepted it, but I couldn't go on feeling like I did.

In looking around the Internet, I came upon a directory of Kink Aware Professionals, including therapists who provided their names for people who needed to talk about BDSM but feared judgment. I visited two. One listened to me silently, with a vaguely sorrowful expression; he offered no feedback, and left me wondering why he'd listed his name in the directory. He obviously didn't know what to do with me, and I got the uneasy feeling that I worried him. Naturally, that didn't help at all.

Luckily, the other was everything I could have asked for -- open, patient, clearly knowledgeable about BDSM. He looked straight at me and nodded understandingly when I confessed the whole trail of events; he explained how common my experience was; he gave me ideas about where to look for more information, but didn't try to put his own preferences into our talks. "Most people in your situation feel that they've broken a major taboo," he said. "A lot try to get away from BDSM. But I'm not hearing that from you. You want to adjust, not escape." I nodded, and arranged to see him regularly.

Still, I don't think I could have put myself together again without two other things.

My close friend Andrew went after me at a drunken party. *Shades of Richard,* I might have thought, but I never did. Andrew pinned me to the floor, laughed as I fought back, hurt me, finally kissed me. When I asked in bewilderment what brought this on, he confessed. "When you were gone, I missed you," he whispered, "and I've never missed anyone like that before." He was as afraid of the darkness of BDSM as I had been, yet he'd thought of me and found himself fantasizing. He wanted to try it with me, but first he wanted to be sure that he and I would remain close -- wouldn't lose what we already had.

In everything Andrew told me -- everything we said to each other, laughing, almost in tears, burying each other in embraces, happily drunk and clear-eyed in the morning -- I found the things that were missing with Richard. Uncertain about BDSM, guarding his and my boundaries, Andrew wanted to commit to me and to a devoted monogamous relationship. Part of me counseled caution and withdrawal, but as my therapist laughingly put it, Andrew was as tempting as an ice-cream factory. It was my chance to fall straightforwardly in love.

Soon after that, I had to explain to my parents why I wanted a psychiatrist who was out-of-network for my health insurance. I closed my eyes as my father asked why I needed this specialist, what his focus was. "S&M," I said shortly.

Why had I worried? I knew my parents had striven to give me an independent, rational, feminist outlook. Self-esteem and integrity. I was so lucky, I understood as my father said nothing but, "All right." It was a blinding realization: my father might have judged me with all the worst things I thought of myself -- but instead, he trusted me to do my best.

When I called my mother (long separated from my dad), too many of my flatmates were around for a private conversation indoors. I banished myself into a warm summer storm, cradling my cell phone away from the rain. There was a pause after I said the fateful words -- then she said, "Have you talked to your father about this?"

"Yes," I said hesitantly. "Why?"

"Well, I think it was an issue in our marriage that I was more into that stuff than he was."

Fat droplets soaked my hair. The tight knot in my chest -- familiar for nearly a year -- loosened as I caught my breath. I turned my face up to the sky and let the tilted world resettle around me; my mother's faraway voice helped me through a hundred things that had torn my heart. "You aren't giving up your liberation," she reminded me, and emphasized my continuing right to a partner who respects me. She even noted mildly that she'd "wondered" about me when I was a child.

I'd feared that I was damaged, that there was something deeply broken in me. I'd wildly guessed that I'd suffered trauma and repressed the memories. But if my mother -- one of the most independent, feminist women I've ever met -- could reconcile BDSM, then I knew I could. And if she was into BDSM herself, then rather than viewing my proclivities as damage, I could see them as something intrinsic we shared.

Over the next hour, my mother told me I could retain rationality, self-esteem and integrity. For the first time, I found myself believing it.

My therapist laughed when I told him. "I swear," he cried, "it's genetic!"

* * *

There was one loose end to a conclusion that felt like a fairy tale. Though we had some unfettered conversations, tension remained between me and Richard -- perhaps it even worsened. At one point, observing us, Andrew said mildly: "Settle down, you two."

Worse, Andrew and I were going in different directions. I finally felt somewhat at peace with BDSM, but he couldn't gain that comfort, and started backing away from it. It was impossible not to think of Richard and shiver, remembering how uncompromisingly vicious he could be. When Andrew and I broke up over a year later, I knew: *I shouldn't see Richard.* My therapist warned me to be careful with BDSM when my heart was in pieces.

Of course I wasn't.

It was the first time I'd explicitly pursued Richard since he'd told me, so long ago, that he was busy. I emailed him straightforwardly, sat down on his bed shortly after Andrew and I broke up. When Richard set his fingernails into my skin, he murmured, "It's been a while," as if he'd always known he'd see me here again. The tears came more quickly than they once had -- I'd fought them then, unwilling to break down in front of him. I'd been successful, too. Richard had only made me cry once, before.

This is what I want, I reminded myself as Richard wound his hand in my hair and pulled my head back. His teeth bruising my shoulder felt familiar and wrong. A kiss on my neck sent me rigid. Sobs nearly choked me. *Why now,* my heart cried, *why not when you were who I dreamed of, Richard?*

I couldn't fault his empathy -- he pulled away. "No," I said unwillingly, "I'm fine," but he wouldn't continue. Uneasily, he pointed out that I'd never reacted like that. I said he'd never kissed me like that, and he asked, "Really?" as if it were a surprise.

Yes, I thought, forcing my tears away. *I was desperate for it. I know.*

To get him to keep hurting me, I had to convince him that I was fine. *This is what I want,* I coached myself. I was nearly composed when Richard mentioned Andrew, and I felt grief rip me open.

He watched me cry, got me a glass of water. *Shades of two years ago,* I might have thought, but I never did. I apologized; he said only, "I thought this might happen." On some level, I knew that I had, too -- for all my self-reassurances that I would be fine. *What was I thinking?* I asked myself, and the answer came instantly. *I had to know.*

When Richard asked if I wanted to sleep over, I said I didn't. "Then don't go yet," he said softly, putting his arms around me where I lay. I rested my head on his chest. *I won't tell Andrew about this,* I decided, wondering if he and I would be together again. *Even if I've learned that I don't want Richard anymore.*

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In retrospect, it seems surreal that I reacted so badly to my BDSM orientation. The agonizing memories of my adjustment have lost their emotional flavor. I've learned a lot about how to practice BDSM safely -- physically and emotionally. I've had multiple BDSM partners, and I've had positive experiences in the welcoming BDSM subculture. In recent times, I've even begun to switch: occasionally I'll be the dominant partner, though I feel submissive masochism far closer to my core.

Still, I remember the unease I felt at first -- and I recognize stronger unease in others. I certainly wouldn't describe this orientation to, say, an employer. I believe BDSM needs a liberation movement, just like homosexuality, but I'm not (yet?) ready to be a public spokeswoman. And I definitely wouldn't consider dragging others out of the closet. I write about BDSM under a pseudonym, and I have changed the names of Richard and Andrew.

I fear that others will read this narrative as describing an assault, a near-rape -- and a woman who tried to rationalize her experience by embracing it. That's not what happened. When Richard first pulled my head back and hurt me at that drunken outdoor party, I could have said no. The word was echoing in my mind, waiting on my lips, and I didn't say it because I didn't want him to stop. I was certainly intoxicated, but I wasn't helpless. I was threatened, but I was not afraid. I may have fought self-actualization like a caged animal, but I could not deny it. I have always been this way.

Conversely, I'm afraid that some conservative will read this and say: "Look how the feminist movement has failed us!" That's not what happened, either. I identify as feminist, and I don't believe that to be at odds with being a submissive masochist. Indeed, I believe that the feminist movement helped my practice of BDSM: it's one of the factors that gave me the strength and self-assurance required to figure out and discuss my sexual needs.

Andrew and I did get back together; then we broke up again. Richard and I have had other nights together. I wish this narrative ended cleanly. I wish I could say that I've found a fairy-tale lover, that I'm now with a man who both hurts me till I cry and gives me the relationship I want. (Why stop there? He could be rich and handsome and a great cook, too!) But this is my story, not a fairy tale. Just as well; that means I still have space to learn. I believe I've gotten better at communicating clearly. I believe I've gotten better at sorting out the harsh emotions inspired by BDSM, working with -- and enjoying! -- those feelings in the context of a loving relationship. And I hope I no longer objectify my sadistic partners to the extent that I objectified Richard. Still, I know I've got a ways to go.

I see BDSM as a continuum -- similar to the theory that homosexuality is a continuum -- and sometimes I think that everyone's on the continuum to some degree. I don't think Andrew is as far into the continuum as I am, and not as far as Richard, either. But there are reasons I was with Andrew for nearly two years, yet never let myself fall completely into Richard.

A certain kind of devoted relationship is important to me. I felt strongly about Richard, and he was a good fit for BDSM, but he couldn't give me the relationship I want. I went back to Andrew, though he was far less into BDSM, because I was able to love him. I wonder, though: if I ever fall for a completely vanilla man, will I be able to compromise that far? It seems unlikely. Maybe if that happens I'll have to remember my friend's words and find a separate person, a non-lover who inflicts pain.

I'd rather not do that, but I can't imagine giving up BDSM. The idea feels equivalent to a vow of celibacy. As my therapist said, I'm not looking to escape -- especially not now that I've finally adjusted. It wasn't easy, but I feel that today I am triumphant. And I believe, I hope, that knowing what I want is the surest path to falling straightforwardly -- happily -- in love.

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This can be found on the Internet at:

http://clarissethorn.com/blog/2010/06/30/love-bites-an-sm-coming-out-story-mirror/

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EDUCATION:

[theory] Liberal, Sex-Positive Sex Education: What's Missing

I originally wrote this in 2009, then reposted it in 2010 as part of a group drive by sex-positive bloggers to solicit donations to Scarleteen.com. Scarleteen is an amazing sex education site run by the equally amazing sex educator Heather Corinna, and it can always use donations! You should totally go investigate that site -- after you're done reading my work, of course.

When I first published this piece, the sex-positive film director Tony Comstock commented on Twitter, "I think that post of yours might be one of the most important things written about sex-positivity in the last 10 years." I was really honored by that, because he does excellent work.

My parents occasionally read my blog, and I also got some interesting feedback from my mother. She wrote to me: " Speaking from where I sat when you were growing up: I wish I could have taught you what you eventually learned on your own. But I felt there was this unchallengeable wave moving and I didn't have a place to stand to counter it. I kept thinking I was leaving you to learn the hard way exactly what I learned the hard way, and was still learning, and was despairing of ever learning."

I wrote back: "For what it's worth, I remember you trying to stem the tide with small comments, and I think that those comments later helped me center myself in a place where I could reach my own conclusions rather than blindly sleeping around." I hope it made her feel better, because it's true. I'm not a parent, although someday I would like to be... but I think one of the hardest things about parenting must be knowing that your kids will learn terrible things from the surrounding world, and the best you can do is try to be there while they process those lessons.

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Liberal, Sex-Positive Sex Education: What's Missing

I am fortunate. I was born in the eighties and I received a great sex-positive upbringing. The public school I attended taught students how to use condoms; middle school health education included a section on sexually transmitted diseases. My parents didn't throw their sexuality in my face -- but they were almost always matter-of-fact, understanding and accepting when they talked about sex. (I'll never forget how, at age 12 or so, Mom sat me down and gave me a long speech about how it would be **totally okay** if I were gay.) I was raised Unitarian Universalist, and the Unitarian Sunday School teen program included a wonderful sex education curriculum called About Your Sexuality. (I understand that the sex-ed curriculum has been changed and updated, and is now called Our Whole Lives. I haven't delved deeply into the Our Whole Lives program -- maybe it addresses some of the issues I'm about to describe.)

So I think I'm in a good position to describe the problematic signals we face in liberal sexual education. Yes, I've experienced the overall sex-negative messages that drench America, and they're terrible -- but so much is already being said about those. I also received lots of sex-positive messages that are incomplete, or problematic, or don't quite go the distance in helping us navigate sexuality -- and I think the sex-positive movement must focus on fixing them.

I'm so grateful for my relatively liberal, relatively sex-positive upbringing. I think it did me a world of good. But here are **my five biggest problems with the way I learned about sexuality:**

1. ***I wish that I hadn't gotten this message: "Sex is easy, light-hearted -- and if it's not, you're doing it wrong."***

Do I believe sex can be easy? Sure. Do I think it can be light-hearted? Absolutely! But do I think it's **always** those things? No, and I don't think it "ought to" be.

I think we need to teach that sex can be incredibly difficult. It can be hard to communicate with your partner. It can be hard to learn and come to terms with your own sexual desires. It can be hard to understand or accept all your partner's sexual desires. And just because it's hard, doesn't mean that you're with the wrong partner -- or that you're missing some vital piece of information that everyone else has -- or that you're doing it wrong.

And as for light-hearted, well -- sure, sex can be "happy rainbows joy joy!", but it can also be serious... or dark. And there's nothing wrong with that!

I recently talked to a friend, who also identifies as a BDSMer, about our stories of coming into BDSM. Both of us had sadomasochistic fantasies from a very early age (mine, for instance, started in grade school -- seriously, I actually did tie up my Barbie dolls). I told my friend about how I'd always had these intense, dark, violent feelings -- but when I made it to middle school, I remember a change. I had a series of vivid BDSM-ish dreams, and I freaked out. I closed it all away, I stopped thinking about it, I repressed it all as savagely as I could.

Before that, I had also started thinking about sex. I imagined sex at great length; I read about sex. I had long since filched my parents' copy of *The Joy of Sex* and examined it, cover to cover -- not to mention many other fine sexuality works, like Nancy Friday's compilation of female sexual fantasies *My Secret Garden.* I was totally fascinated by sex. I talked about it so much that one of my friends specifically searched out a vibrator as a birthday present for me. I actually pressured my first major boyfriend into some sexual acts before **he** was ready, which I suppose is an interesting reversal of stereotype (but to be clear, it's not okay that I did that). As I started having sex, I found that I liked it okay, but knew a lot was missing -- and couldn't figure out what.

It took me years and years to connect sex to BDSM -- to figure out that the biggest thing I was missing was BDSM. Why? Because BDSM was horrible and wrong, and I'd shut it away; BDSM (I thought) couldn't possibly have anything to do with the bright, shiny, happy horizon of sex! Coming into BDSM was a crisis for me partly because -- although I knew other people practiced it, and had never thought much about that -- my own need for those dark feelings totally shocked me. This wasn't me. This wasn't **healthy sex**. Sex was light-hearted, happy rainbows joy joy!... wasn't it?

In contrast, my friend -- who had an extremely sexually repressed upbringing -- never had any trouble integrating BDSM into his sex life. Sex, for him, was already wrong and bad... so as he got in touch with his sexuality and began having sex, BDSM was involved from the start. After all, there was no reason for it not to be.

As glad as I am that my upbringing was not stereotypically sexually repressed, I have to say that I envy my friend his easy personal integration of BDSM.

2. *I wish this point had been made, over and over: "You might consider being careful with sex."*

I recently read an excellent *New Yorker* article that reviews the new version of *The Joy of Sex.* It talks about the time when *The Joy of Sex* came out, as well as a similar contemporary feminist book, *Our Bodies, Ourselves,* and it points out that "both books espoused the (distinctly seventies) notion that sex could be a value-neutral experience, as natural as eating."

"Value-neutral": that's a great way to describe the overall attitude about sex that I absorbed. As if sex were something I could do as an amusing diversion, with anyone, at any time, and it would always be fun fun fun! As if there was no need to be overly careful or sensitive -- sex was just a game I could play, like a sport -- where the worst that would happen if I screwed up might be a skinned knee.

I wish that there had been an emphasis on how emotions can really **matter**, when it comes to sex. I wish that there had been acknowledgment of the fact that we can really hurt ourselves, and others, when we're cavalier about sex. (Not that we always do -- but we can.) I wish I had understood sooner that sex is not always value-neutral; that everyone has all manner of different sexual needs and hangups, anxieties and strong emotions. I think maybe there are people out there who can have "value-neutral" sex -- where it's totally about physicality and nothing more -- but I am not like that, and I suspect that most people are not.

Which isn't to say that I think there's anything **wrong** with people who can have sex that's "value-neutral." (And maybe "value-neutral" is not a great term for it; I worry that I sound like I'm judging when I use that term.) I just don't think it's a good model for everyone, and yet I think that it has somewhat been promoted as if everyone "ought to" be that way.

I think that there are lots of people out there who feel as though the sexual liberation movement "failed" or "betrayed them," because they convinced themselves that sex is value-neutral and then got hurt. You see a lot of assertions along these lines in the conservative media -- for instance, here's a quotation from a synopsis of the book *Modern Sex:*

> *The 1960s sexual revolution made a big promise: if we just let go of our inhibitions, we'll be happy and fulfilled. Yet sexual liberation has made us no happier and, if anything, less fulfilled. Why?... sex today is increasingly mechanical and without commitment -- a department of plumbing, hygiene, or athletics rather than a private sphere for the creation of human meaning. The result: legions of unhappy adults and confused teenagers deprived of their innocence, on their way not to maturity but to disillusionment.... These beautifully written essays -- on subjects ranging from the TV show Sex and the City to teen sex to the eclipse of the manly ideal to the benefits of marriage -- add up to the deepest, most informative appraisal we have of how and why the sexual revolution has failed.*

I disagree with most of their attitude. We don't need innocence. We don't need sexual mystery. We don't need to eliminate teen sex. We don't need to re-establish some limiting, patriarchal "manly ideal." But they've got one thing right: we do need to start talking about sex as something that is **not** mostly mechanical -- as something that, yes, can be "a private sphere for the creation of human meaning."

3. ***I wish I'd learned this: "Good sex doesn't just require two (or more) people who like sex. It requires desire -- and desire simply doesn't work the same way for everyone."***

I've said before that I went through a period -- back when I was first becoming sexually active -- where I simply **could not figure out** why sexual acts with people I didn't care about didn't seem to turn me on. Or rather -- they turned me on a little, but not... much. It took me a while to understand that sex requires more than just two eager people. It requires attraction and desire.

When I was fifteen or so, and at summer camp, I remember making out with a boy. I didn't really want to make out with him, but I wasn't sure how to reject him (more on this under point 5). And I figured: he seems nice enough, so I might as well make out with him. Afterwards, I felt angry at myself, and I felt like I'd wasted my time -- and I felt confused. I'd been bored at best and repulsed at worst, and I wasn't sure why I felt that way, or why I'd done something that made me feel that way.

So why **had** I done it? Because I'd thought: "Sex is value-neutral." Because I'd thought: "Making out is fun, right? -- that means I ought to do it when I get the chance!" Because I'd thought: "My preference not to make out with him is probably just some silly repression that I need to get over." Because I didn't understand that desire is complicated, that you can't just make yourself feel desire when it's convenient, and that you don't need a reason for your attractions -- or lack of attraction. This situation was to reprise itself in various forms over the next years, until I finally learned that sometimes you simply want or don't want things, and that you aren't required to justify your desires.

4. ***I wish I'd gotten a list of suggestions: "Here are some places you might go to start figuring out what turns you on."***

I was told that sex was fun. I was even told to explore! But I still spent years with very little actual idea of what I wanted. No one ever told me how or where I might be able to learn more about my needs, or what exploring my needs might look like. And no one ever explained that people are turned on by different things, that some people like some sex acts and don't like others, and that's okay.

I went into sex with a buffet-style attitude, thinking that I must naturally enjoy sex equally in all ways. I was so surprised when I found out that I like some positions better than others! I remember how confused I was when I dated a guy who didn't like fellatio, and how hurt I felt -- like his lack of enjoyment meant that I must be doing it wrong, because **everyone** likes oral sex, right?

And of course, while I had a pretty comprehensive idea of the vanilla sex acts I could experiment with, I had very little idea of what else was out there. In retrospect I find this hilarious, but I remember -- back in my vanilla days -- I had two boyfriends who tied me up. They tied me up and were nice to me, and I suppose it was amusing enough, but didn't drive me crazy with lust or anything. And -- this is the kicker -- **because I did not understand that there's a lot more to BDSM than light bondage, because I did not understand that there are many separate BDSM acts that people can enjoy and many ways to flavor them, I assumed from this experience that I didn't like BDSM.** I went through my old journal entries the other day and uncovered one in which I, confused, am speculating about what's missing from my sex life: I write, "I've tried S&M, so it can't be that."

What a learning curve I had ahead of me, eh?

I wish someone had tried to explain to me the vast cornucopia of human fetishes out there. I wish someone had explained that erotica and pornography are both actually really good ways to learn about your turn-ons, and -- more importantly -- had told me that **not all erotica and pornography are the same,** so the fact that I wasn't into mainstream stuff didn't mean I automatically wasn't interested in all erotica or porn. I've mentioned that I had lots of conversations with friends about sex, but -- until recent years -- those conversations were never framed as "This is what I like," or "I've found something new that turns me on," and I wish I'd realized sooner what a great resource conversations like that might be.

5. ***I wish I'd gotten a list of ideas: "Here are some ways you can try communicating with your partner about sex."***

Lastly, but certainly not least -- I was never taught how to communicate about sex. No one ever gave me even the first idea. In all my sex-positive, liberal sexual upbringing, I was told over and over that "relationships require communication", but no one ever said: "And here's some ways in which you might communicate sexually with your partner."

One big benefit of teaching sexual communication strategies is that it helps people learn to say "no" when they don't want to do something. Teaching people how to set boundaries is massively important, and I think a lot about ways to do it. I saw this adorable video about cuddle parties recently that really struck me -- these people create parties where everyone basically just cuddles, but everyone also specifically has the power to say "no" to any given person or act. The reporter who made the video talks at the end about how she found the whole experience to be empowering -- how she felt like it gave her space to say "no" that she hadn't had before. Perhaps these could be used to teach people to set boundaries?

But you can't really use cuddle parties in a school or workshop setting, more's the pity. When I developed my first sex education workshop, it was all about describing good communication strategies. I listed questions that all sex partners could benefit from asking each other, including "What do you like?" and "What do you fantasize about?" and "Is there anything you really don't want me to do?"

And I talked about ways that you can make communication easier, if the two partners are uncomfortable having this conversation. I took a page from the BDSM community by creating checklists of all kinds of sexual acts and weird fetishes and gender-bending craziness, and I put it all on a 1-5 scale (with 1 being "not at all interested" and 5 being "I'd love to try this"), and I told people that they could try filling out those checklists and giving them to their partners. (The amazing sex education site Scarleteen later implemented the same idea, in a much more comprehensive way than I had!) I suggested that partners write out their fantasies and email them to each other, or write out descriptions of their mutual sexual experiences -- long accounts, describing how they felt about everything and what sticks out in their minds -- and send those to each other, too, so they can get each others' perspectives on what they've done.

(By the way, I still offer a much-improved version of that workshop on my list of events, lectures, and workshops, just in case you're interested in bringing me in....)

God, it's so **hard** to talk about what we want. It's even hard to talk about talking about what we want. I mean, it's hard enough to figure out what we want in the first place -- but communicating it... eeek! And it's worth noting that this is not just a problem of having good sex. As was pointed out recently on the blog for the wonderful sex-positive anthology *Yes Means Yes!:*

[There is a] need to demystify and destigmatize communication about sex. If we can't talk about what we like and what we want, we will always have problems making clear what it is we're consenting to. If we can't be frank about what we do want, we put a lot of weight on the need to communicate what we don't.

Giving everyone great sexual communication skills doesn't just give us all better sex -- it fights rape. There's a noble cause for you!

... So, that's my five-pointed analysis. And that's what I'm pushing for. My goals are not just to get people thinking that sex is awesome and sexual freedom is important. It's going to be hard, and it's going to be an uphill battle, but I'm hoping that I can not only help out with sexual liberation -- I'm hoping to **improve** it.

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This can be found on the Internet at:

http://clarissethorn.com/blog/2010/11/11/classic-repost-liberal-sex-positive-sex-education-whats-missing/

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COMMUNICATION:

[theory] Sex Communication Tactic Derived From S&M: The Annotated Safeword

As soon as I started researching S&M and thinking critically about the communication tactics promoted in the S&M community, I realized that there were a lot of really important lessons wrapped up in those tactics -- lessons that could be deconstructed and applied to all kinds of sexuality. From the beginning, I planned to do a series of posts on Sex Communication Tactics Derived from S&M, but I only got around to it in 2010.

The post about safewords caught the attention of Thomas MacAulay Millar, a feminist blogger and S&Mer who is older and more established in the blogosphere than I. Thomas asked if he could annotate the article, then post it on the blog where he usually writes -- the blog for the excellent sex-positive anti-rape anthology Yes Means Yes. *Of course I agreed. The final product looks something like a conversation between me and Thomas, although I wrote the post before he added his input.*

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The Annotated Safeword

Thomas MacAulay Millar:

Clarisse Thorn's post about safewords is so good I'm just going to repost the whole thing and annotate it.

Clarisse Thorn:

Everyone knows about BDSM safewords... or at least, everyone thinks they know about safewords. But one of the initial moments that really impressed me about my current boyfriend was when I asked him, many moons ago, if he knew what a safeword is. He paused, then answered, "I think I'm familiar with the idea, but I probably don't know much more than a stereotype, so I'd like to hear you define it." Humility and open-minded curiosity are so **incredibly** hot!

Righto. Hot boyfriend aside, I'm here to explain safewords and check-ins, and how those concepts can exemplify excellent sexual communication for everyone -- not just S&Mers -- in a world that doesn't do a good job teaching anyone how to communicate sexually.

When two (or more) people have a BDSM encounter together, generally they set a safeword -- a word that anyone can say at any time to stop the action. (Sometimes people don't use safewords. This is their choice and I totally respect it. I would not recommend going without safewords for anyone who doesn't know their partner **extremely well**, and I would be seriously sketched out by anyone who pressured a partner to go without safewords.)

Thomas MacAulay Millar:

A word on origin: safewords are only strictly necessary in one circumstance -- where the participants want words like "no" and "stop" not to have their ordinary meaning. One can do BDSM for a lifetime without a safeword, if words have their ordinary meanings. As former porn star and kinkster Ona Zee once put it (I'm quoting an interview from memory here), "our safeword is 'that hurts.'" Folks can even do heavy play depending on how they react to things, without a safeword, simply saying "stop" or "too much" or "fuck, I can't handle any more of that!" when the play gets too intense. Any BDSMer who would tell you URDOINITRONG if you use ordinary words to communicate in scene is not someone you need to listen to.

Safewords are essential for roleplay where "no, please don't, I'll do anything!" should not stop the action. It's also essential for any bottom who will involuntarily shout "No! Stop!" while actually wanting more. Other than that, it's an optional tool -- a very, very useful one, for many reasons. Clarisse mentioned that some people "don't use safewords." From the context, she's talking not about people for whom no means no in scene, but people for whom there is no definitive way for the bottom to stop the scene. And perhaps readers can tell from Clarisse's tone that that's... the advanced class. You'll find the safety police in any BDSM space or community that finger-wag about it, and the swaggering more-kinky-than-thous that brag about it. But what does it mean?

I can only tell you what it means for me. There are times I give up my safeword: only to my spouse. We've been playing together for about a decade and a half. If I give up my safeword, and that's something we do rarely, it doesn't mean I don't have limits. I have limits! Yes I do! There are things I can't handle, mentally or physically, and things I never want to handle! There are "hard limits," things I've said I'm just not willing to do. And there are soft limits, things I don't think I'm ready for but I'm willing to bump up against them and see what happens. If I give up my safeword, it means I have limits, but instead of telling her when I've reached them, I'm going to trust her to listen to me and watch me and make that decision. I may say, "I can't, I can't, I can't," and she may decide I really can't. Or she may decide I've got more in me than I believe I do. There's a lot of risk associated with that. But there's a trust in those moments and a closeness that does not go away when the scene is over. Or ever, really. Risk and reward: we set our own tolerances.

Some folks may have come across the term "consensual nonconsent." It's one of those terms with multiple meanings. Some people use it to describe any situation where the bottom is saying "no, don't" but has not yet safeworded -- a usage I find less than useful. Others use it to describe roleplays of nonconsensual situations. The last common usage, though, is that which I like to describe using Hunter S. Thompson's phrase, "buy the ticket, take the ride." It means that the bottom consents to be in a situation I've just described, where the top decides if the bottom needs to stop, often but not always around specific activities, and usually (wisely) heavily negotiated.

Clarisse Thorn:

When I give advice about setting safewords, I usually offer the following:

A) Some people like to say that it's good to use a safeword that's jolting, and is likely to make your partner feel totally unsexy. Isn't there a *Family Guy* episode in which Lois & Peter's safeword is "banana" or something?

Thomas MacAulay Millar:

Not a fan. The more obscure a safeword, the harder it is for a bottom who is spacey or flying on endorphins to access it. It's easy to remember "banana" in the calm before the storm. At the moment when it's most needed, that can easily become a muddle of "yellow? was it a fruit? Shit, what do I do?" That's not a place bottoms want to find themselves and a top never, never, never wants to have a bottom who is at a limit but can't communicate about it.

Clarisse Thorn:

B) In my experience, the generally accepted safewords in the S&M community are "safeword" and, more commonly, "red." I consider it useful to go with the "public standard" because that means that in the future, you're likely to be attuned to the correct word if you practice BDSM with other partners as well. (It also means that if you ever do S&M in a public space such as a dungeon, everyone in the place will recognize your safeword if you scream it.)

C) At first wasn't that excited about this, but I've grown to love the fact that the safeword "red" also sometimes encompasses "green" -- and "yellow." That means that if I'm in the middle of an S&M encounter, I can say "red" and my partner will stop; I can then catch my breath and say "green," which means "by God keep going!" Or, if I'm a little uncertain about the territory but don't actually want my partner to stop -- if I just want my partner to be a little bit cautious -- then I can say "yellow" (and, of course, I can move to "green" if I become really psyched, or shift to "red" if I really want my partner to stop).

Thomas MacAulay Millar:

My spouse and I use the "stoplight system." It's simple, it works, and "yellow" option is really useful for things that are getting hard to handle. Also, a lot of bottoms are either submissives or masochists with more pride and stubbornness than is good for them -- the former out of an overdeveloped desire to please, the latter sometimes out of a desire to impress or even just a pitbull-stubborn urge to push themselves as hard as they can go. Take the personalities that finish an Ironman and collapse and need IV fluids, and put them on a spanking bench with big welts from a prison strap, and you've got someone who won't safeword when ze probably should. In those and other circumstances, giving the bottom an easy option to say, "I'm struggling here" without feeling like they're quitting is a very useful thing.

[Editor's Note: "ze" is the gender-neutral pronoun, and it's in the Glossary. Clarisse tried to use it regularly for a while, but ultimately concluded that it made her posts less accessible to non-gender nerds.]

Clarisse Thorn:

I know that this probably doesn't sound sexy at all, but it totally can be! Consider the following example: during my last vacation to America, I had an S&M encounter with a dude I'll refer to as Klark. (It's not my fault. He requested the pseudonym.) At one point, Klark was experimenting with hurting me, and I had my eyes closed and was whimpering / crying out in a totally glorious way. (The poor overnight desk clerk. He was only one short flight of stairs away from us.) I think Klark was legitimately having trouble detecting whether I was enjoying myself, though -- understandably, because we had only just met, and I enjoy sinking myself into dramatic masochistic misery -- so he leaned over me and said, in a low dark voice, "Red, yellow, green." Immediately, I gasped back "Green." Because he spoke in a gritty and dominant voice, and the check-in was quick, we were able to maintain the mood -- and it was actually kind of hot in itself.

Which brings me to the other thing: check-ins. Sometimes, you want to check in with your partner. Which can be easy: you can just say, "Hey, how does this feel?" or, as a more precise example, "Give me a rating of 1-10 on how good this feels (or how much this hurts)." But if you want to do it quickly and without shifting the mood, you can do it as I outline above in the Klark example. Or even quicker, as for example with the hand-squeeze system, where the participants agree ahead of time that you can squeeze another person's hand twice and expect two squeezes back -- and if there aren't two return squeezes, it's time to stop and figure out what's going wrong. (Squeeze system: also very helpful when gags are involved.)

Thomas MacAulay Millar:

There are all kinds of safesigns when nonverbal communication is necessary; one being to give the bottom an object to hold and to drop when at a limit. It has the disadvantage of being binary, so it loses the middle step that the stoplight system provides.

Clarisse Thorn:

Sometimes submissives will have a hard time safewording -- whether out of pride, inexperience, or eagerness to please -- and that's another reason check-ins can be good even when there's a set safeword. If you aren't sure how to read your partner's reactions and you suspect ze may be uncomfortable with what you are doing, then you might consider checking in even if ze hasn't safeworded, because **your suspicion may be right**.

Thomas MacAulay Millar:

This can't be emphasized enough. **Tops Can Never Be On Cruise Control!** A safeword gives the bottom a tool to communicate, but it does not ensure safety. The top has at least as much information that the bottom doesn't have, as the bottom has information the top doesn't have. Therefore, the top has to be a full participant in making sure the scene is working and the risks are under control at all times. Anyone who thinks ze can ignore safety as long as the bottom has a safeword is dangerous.

This post was edited to add: In the comments on this article, Dw3t-Hthr made a powerful point that for some people, safewords are unavailable in scene. She said, in part:

[I]f I am in a place where a safeword might be necessary, a safeword is not possible. Not just because I am someone who is regularly nonverbal, but because the altered consciousness state that I achieve makes processing those sorts of questions at best difficult and at worst unachievable...

But I'm not a bottom, I'm a submissive, and this isn't about "wanting to please," it's about a psychological incapacity to recognise when I might be doing myself damage in certan situations. If I'm not in that state, I can say "Oh stop doing that it's wrenching my shoulder" or whatever is appropriate. If I am in that state, I cannot indicate and have to place complete trust in the judgement of my partner.

I happen to know that I'm not the only person like this. I think it's important to recognise that safewords are not always possible. It's important, I think, to communicate to the person who resembles me in this that while their brainwiring is not morally incorrect, that they probably ought to think of themselves as Advanced Subjects and try to do their thing in a context where the trust and competence required to do it safely is demonstrated.

Also, a note on terminology: Clarisse used "submissive" there in a way where it's not clear from the context whether it's meant as an umbrella term like "bottom" or as a specific term. The use of "dominant" and "submissive" as the default terms seems to me to have started in the mid 90's, and I've never liked it because of its imprecision. Not all bottoms are subs; some people like to bottom but don't have a submissive bone in them. Some bottoms are wisecracking smartassed masochists only in it to play the pain game and ride the endorphins; some bottoms don't see themselves as giving up power in any way to the top. And I top my fair share, but I certainly don't think of myself as a dominant. I think the change in terminology arose with a small but vocal minority of kinksters who believe that everyone who does BDSM is really looking for a deep power exchange, ultimately even a 24/7 relationship. I still see people make this argument. They're still wrong, and they're still few in number. Using "submissive" and "dominant" when one means to include folks who are just topping and bottoming may be misunderstood; saying "top" and "bottom" is almost always correctly understood as the inclusive term. ("Sadist" and "masochist" are specific terms that shouldn't be pressed into general service either; there are submissives that really, really don't like pain at all and dominants that would prefer never to inflict it.)

Clarisse Thorn:

What I love about safewords and check-ins:

1) Hypothetically, mainstream society acknowledges that anyone could say no at any point during sex, but in practice, this is really hard. A variety of forces -- girls socially pressured not to be so-called "cock-teases," boys socially pressured to supposedly "prove their manliness," and everyone anxious to please their partners -- work against people's capacity to say no; and while there is a vague understanding that "no means no," that vagueness is as far as it gets. There's no explicit framework in place for how to say "no," and no understanding of how to continue an encounter (or relationship) after one's partner says no. Even worse, there's an assumed linear progression of sexual activity -- the best example is the "base system," which places sexual interaction on a metaphorical baseball diamond where "first base" = groping and "home base" = penis-in-vagina sex. Have I mentioned that I hate the base system?

So anyway, the biggest moral of the story with safewords and check-ins is that consent does not only happen once. **Consent is always happening, and can always be renegotiated or withdrawn**. Adapting my understanding of sexuality to reflect this -- even in my non-BDSM sex -- might have been the best thing that ever happened to my sex life.

Thomas MacAulay Millar:

What can safewords do for non-kinky people? Permission communication. In a culture that delegitimizes communication -- especially women's communication of limits or needs -- this is **huge**. Safewords permission "no." That which permissions the free exercise of "no" also, necessarily, creates space for the free exercise of "yes."

Clarisse Thorn:

2) On a related note: **Good sex is not about entitlement**. If we acknowledge that anyone can safeword out of any sexual act at any time, then we acknowledge that no one is

entitled to any kind of sex from a partner -- ever. If your partner loves you but doesn't want to have sex with you? That's a respectable choice. If you're really turned on, but your partner can't stand the idea of having sex right now? That's a respectable choice. Those two are easy, I think, but how about these?

+ If your partner used to do something with you a lot, but doesn't want to do it anymore? That's a respectable choice.

+ If you are married to your partner, but ze doesn't want to have sex? That's a respectable choice.

+ If your partner performed a sexual act with another partner but would prefer not to do it with you? That's a respectable choice.

+ If you know your partner likes a certain kind of sex, but they don't want to do it right now? That's a respectable choice.

+ If you think a certain act is "mild" and "taken for granted," like kissing or tickling, but your partner doesn't want to do it? That's a respectable choice.

By the way, if you (like I once did) feel as though your partner is entitled to sex of any kind, I encourage you to re-examine that feeling. Ditto if you've got a little voice in your head telling you that you "ought to" be up for sex all the time just because you don't get it very often... or that you "ought to" be up for sex if you've done it with your partner before... or whatever. The other best thing that ever happened to my sex life was when I finally, finally, finally internalized the idea that my partners don't ever "deserve" sex for any reason -- that there's no reason I ever "should" be having sex -- and that the only reason I should ever, ever, ever do anything sexual is because I legitimately want to.

Of course, if you truly believe that you need a certain kind of sexuality in your life, then you're absolutely entitled to **ask** your partner to consider it -- and you're entitled to leave the relationship if ze isn't up for it. But this doesn't mean that you "deserve" to do that act with that person, or that your partner "owes" you a certain act.

And hey, if your partner isn't down with one specific sexual act, then that means you've got the chance to explore all kinds of other sexuality. Another other best thing that ever happened to my sexuality? Quite possibly, it's my current boyfriend -- whose religious adherence has drastically limited our physical sexual options.

Thomas MacAulay Millar:

We're each entitled to our own identity, but not to our own partner. Our partners are people, with thoughts and desires and limits of their own, and they don't have to do what we want them to do. This goes for tops, too! Tops have limits! Because of my blogging covenant with my spouse (what I do as a bottom is personal to me and I decide how much I reveal; what she does as a bottom is personal to her and she prefers that those stories not be blogfodder) I don't have any really good stories to share about hitting my limits as a top. But they exist. Tops are not required to be into everything a bottom is into, and they damned sure are under no obligation to do things that make them uncomfortable just because the bottom wants it -- whether the reason for the discomfort is risk tolerance, ideology, squeamishness or anything else. Tops can say, "no, I won't suspend you from that eyebolt because I don't trust it", "no, I'm not interested in doing that roleplay because I wouldn't be comfortable with it", or "I don't do play piercing because blood is a hard limit for me." We all have a right to say no to sexual acts we don't want; even if we're topping.

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This can be found on the Internet at:

http://yesmeansyesblog.wordpress.com/2010/07/07/the-annotated-safeword/

Clarisse's original post on safewords can be found on the Internet at:

http://clarissethorn.com/blog/2010/07/03/sex-communication-tactic-derived-from-sm-2-safewords-and-check-ins/

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COMMUNICATION:

[theory] Sex Communication Tactic Derived From S&M: Checklists

This is part of the same 2010 series as the previous article -- in fact, it came first.

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Checklists

S&M checklists are long lists of different acts that sexual partners can use to discuss different acts and measure each others' interest in those acts. Each act on the checklist usually looks something like this:

FLOGGING -- GIVING __________________ O O O O O

FLOGGING -- RECEIVING ______________ O O O O O

Each partner rates each entry by filling out 1-5 bubbles, with 1 darkened bubble meaning "Not interested" and 5 bubbles meaning "I crave this!"

I think this concept is brilliant because:

1) Too often, it's assumed that "sex" encompasses certain acts, and if you're interested in a sexual relationship you must be interested in all those acts. Or there's assumed to be a kind of linear progression, as exemplified in the "base system," where "first base" is groping and "home base" is penis-in-vagina sex. Talking about each sexual act as its own self-contained idea short-circuits those problematic ideas about sex and makes it easier for couples to turn down some of the "assumed" acts (e.g., if I don't want oral sex but I do want penis-in-vagina...).

2) It provides an easy way to communicate desires -- if a person is nervous about saying, "Hey, is it okay if I flog you?" then the couple doesn't even have to talk about it right

away. They can just sit down, fill out their checklists and compare results without getting too worried about how to bring up certain desires. I mean, at some point of course they'll hopefully talk about it, but hopefully the checklist framework makes it easier and lower-pressure.

3) Concurrently, it provides an easy way to **turn down** acts -- it's much harder to reject a lover's proposition when ze says, "Darling, can I flog you?" than it is when you simply fill in one bubble on the "Flogging -- Receiving" section. In the past, I've certainly felt a lot of anxiety when I wanted to turn down partners, and it's nice to imagine a set-up that would have made me feel less anxious.

In fact, I love the checklist concept so much that when the University of Illinois at Chicago had me design my sexual communication workshop, I created a "vanilla" version of the checklist that had entries ranging from "oral sex" to "sex in public" to "tying up / being tied up." (Okay, maybe it wasn't **entirely** vanilla... I wanted to encourage people to voice things they weren't sure about!) Then I later found out that the amazing sex education site Scarleteen has created its own non-BDSM checklist, and theirs is way better than mine.

I just love the **principle** of the thing -- the principle that a couple can have a lot of fun just by sitting down and talking about every conceivable sex act, being presented with some options that they maybe haven't thought of before, and honestly describing how into each idea they each are.

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This can be found on the Internet at:

http://clarissethorn.com/blog/2010/06/14/sex-communication-tactic-derived-from-sm-1-checklists/

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COMMUNICATION:

[theory] Sex Communication Tactic Derived From S&M: Journal-Keeping

This is part of the same 2010 series as the previous two articles. In this piece, I mentioned 24/7 Master/slave relationships, which I had just learned about. Since then, I've learned a lot more about those relationships. I have never been in one, although I have occasionally had partners order me to do long-term submissive things. But I've read and heard a lot of tales about 24/7 M/s.

24/7 Master/slave scenarios are rare... and I will say that there are some awful horror stories floating around about them. Some BDSMers say that 24/7 Master/slave relationships are always a terrible idea and should never be done. I am unwilling to condemn them so thoroughly, but those relationships obviously require a lot of respect *and care from each participant. I would advise a person interested in such a relationship to only consider it with a partner they know very well; to establish pressure-free channels of communication; and to ensure crystal-clear understanding of how, exactly, the relationship can be ended if anyone involved truly wants it to end.*

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Journal-Keeping

Some BDSMers play with really, really strong power dynamics. A good example of this is couples who choose a "24/7 dynamic": one partner is dominant and the other is submissive... **all the time**. I attended a workshop once with Sir Top and slave bonnie, two wise BDSM educators, where I learned that slave bonnie was only ever allowed to disobey orders of two kinds:

* Suicidal orders,

* Orders that would cause financial ruin.

The rest of the time, bonnie obeyed Top -- **all** the rest of the time.

Obviously, relationships like this are totally cool with me as long as they are -- say it with me, everyone -- **100% consensual**! Such relationships can also encourage the use of interesting communication tactics, because many of the usual tactics don't feel right to the participants. For example, these relationships often take place between people who feel such a strong power dynamic that it would be almost impossible for the submissive to feel comfortable safewording -- safewording can feel disconcertingly like a form of resistance.

One way of dealing with this problem is for both partners to keep journals that are open to the other partner. (With some couples, only the submissive keeps an open journal.) They talk about their romantic feelings, they process their sexual encounters, they articulate anxieties, etc. Sometimes a partner will give the other one journal prompts to answer. The idea is that it's easier to express these things when there's a designated space for it outside the relationship; the journals mean that partners (especially submissives) can talk about what they need without fearing that they're undermining the power dynamic.

I find the concept of simultaneous journals intriguing for a number of reasons. One is that I've used similar tactics myself; I kept a private journal for many years, and once in a long while I'd give entries to my partners when I needed to explain something complicated about my feelings. I only did this a few times, ever, but it was really effective when I did.

Later, I took to writing love letters that I noticed were very similar to both my journal entries, and to the simultaneous relationship journals suggested for Master/slave couples. I realized that I was writing letters because, at the time, I felt more comfortable writing about my desires than talking about them. I've gotten a million times better at talking about my sexuality honestly and shamelessly since then; but back then, there were definitely things I wrote to my partners that I couldn't have said aloud. I also wrote because -- just like Master/slave couples -- I wanted to communicate my feelings outside the anxiety-inducing frameworks of the "serious discussion," the bedroom, etc.

So when I developed my sexual communication workshop, I encouraged love letters. I gave two suggested points of departure for a love letter:

1) Describe what happened during a sexual encounter you had together, with particular emphasis on what your partner did that you really liked -- and what you liked about it. ("I love it when you fuck me" is a great thing to say, but you give much more information to your partner if you say "I love it when you fuck me from behind," or even better, "I love it when you fuck me from behind and it feels amazing when your balls hit my clit." [This blog does not necessarily reflect the desires or encounters of Miss Clarisse Thorn.])

2) Describe a fantasy you have. Bonus points if you explicitly put your partner in it. ("I like to imagine you sinking your teeth into me until I scream." This blog does not necessarily... oh, who am I kidding.)

Postscript: In the comments on this piece, a reader noted that they might feel anxious and pressured if a partner described them doing something specific. I hadn't thought of this, but I totally believe that it could be a problem. Certainly, I've sometimes had experiences writing to a partner where I described him doing something and he thought it was ridiculously hot... but I've also done it and had partners dislike it. I guess my final advice is that -- as with all communication -- you'll want to consider the audience, and be ready to apologize.

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This can be found on the Internet at:

http://clarissethorn.com/blog/2010/07/30/sex-communication-tactic-derived-from-sm-3-journal-keeping/

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COMMUNICATION:

[storytime] Sex Communication Case Studies

I wrote this post in 2011, years after the events in my coming-out story, and a long time after I'd done all the above research into communication tactics. By 2011, I'd picked up lots of sexual and BDSM experience with a variety of partners. I had just written a post about my most destructive past relationship; the post got a lot of readers and was eventually cross-posted to Jezebel. I wanted to do something positive with all the attention, so I decided to offer a productive counterpoint.

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Sex Communication Case Studies

In the wake of my last post, which was basically a meditation on one relationship with bad sexual communication, I want to offer some positive examples of sexual communication from my life.

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1) **Low pressure and leather belts.** Years ago, when I was pretty inexperienced in the community, I had a single BDSM encounter with a gentleman in his home. We met at a BDSM discussion group, arranged to meet later at a cafe, and went home from there; as we exited the cafe, I took his driver's license and texted his full name and license number to a friend. (I think more people should do this, frankly -- in fact, more non-BDSM people should do this when they go home with strangers from bars.)

We sat together on the public transit and quietly discussed the upcoming scene: he asked me many, many questions about what I was okay with and not okay with. Questions like: "What do you have experience with?" "Could you go into that more?" "What do you like?" "What makes that fun for you?" "Is there anything you really don't want me to do?" He asked a lot of the questions twice, too, which I think is a really great strategy especially with new partners. People don't always have their heads together enough during these conversations to answer an S&M question properly the first time, especially if it's a broad and open-ended question like "What are the things you really don't want to do?"

I made it clear that I just wanted a BDSM encounter, that I wasn't up for oral sex or vaginal sex or anything like that. He'd never had a BDSM encounter that didn't involve orgasm, so it was a new concept for him, but he was cool with trying it.

After our long discussion of boundaries and limits, we made it to his apartment and settled in. He got out some equipment, including a collar, and he said: "While you're wearing this, you will obey everything I say. Do you have any final boundaries to set? Anything you really want me to do? Anything else you don't want me to do?" I said no, and he snapped on the collar. (We did have an agreed-upon safeword, though -- so I had a way of interrupting the proceedings if I really needed to.)

It was an interesting encounter, partly because he was looking more for dominance (giving orders) than sadism (inflicting pain), whereas at the time I was looking more for masochism (receiving pain) than submission (accepting orders). So we started out with him giving me a bunch of orders (primarily to fulfill his kink), and then in the end he hit me a lot with a leather belt (to fulfill mine). At the time I was still figuring out where the boundary was for me: whether I identified as a submissive or only a masochist; how much submission and masochism were intertwined. That night showed me a lot about how one can create submissive energy within a pre-defined space, even with someone you barely know.

Afterwards, when I was done crying, he took off the collar and we went to bed. (By that time of night, I didn't have a way back home from where he lived, so I had to sleep over.) We chatted about random things, neither of us quite tired enough to sleep. Within half an hour or so, he realized that there was no way he was ever going to get to sleep unless he had an orgasm, but he also understood that I didn't want to have sex with him, so he didn't try to push that. Instead, he said: "I really need to have an orgasm before I can get